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Development Work Important Factor

Average daily production in United States week ended March 15, 1,925,105 bbls.

With Production Below Indicated Needs, Oil Men Are Doubling Efforts to Provide Future Supply of Petroleum

Gain in daily production in United States week ended March 15, 19,850 bbls.

By Andrew M. Rowley

With the production of crude petroleum throughout the United States still failing to equal the output of the first week of this year despite the increases recorded during the past few weeks, probably the most important feature of the situation at this time is the amount of new work planned and which is expected to be inaugurated within the near future. It is conceded considerable new work will have to be done in order to bring production of crude up to the requirements of consumption. The present producing wells of the entire country are not capable of providing sufficient crude oil to meet the needs and additional producing wells, in a large number, will have to be completed not only to hold production of crude at its present level but to bring it up to a safe point in relation to the steadily increasing demands being made upon the industry from consumers.

During the week ending January 5, the production of all the fields of the United States was estimated to have averaged 1,933,197 barrels a day. A decrease of 62,054 barrels a day was registered the following week, bringing the output of all the fields down to 1,871,143 barrels a day, the low point thus far this year. Since that time, the production has increased from time to time but the net gain to this time has not brought it up to the mark of the first week in the year.

Need More Production

The present production of crude is at a rate of approximately 125,000,000 barrels less annually than what it is indicated the consumption requirements for this year will be. This means that at least four big fields with a production of 100 000 barrels a day each should be developed quickly if the production of crude petroleum during 1924 is to equal consumption. There is not even one such field in sight at this time and the longer the discovery of such fields is delayed, the more new production will have to be developed. A serious drawing upon the stocks of crude in the country is inevitable within the near future unless new fields are brought in somewhere in this country.

Elsewhere in this issue in an article dealing with the amount of crude petroleum in storage at this time. There seems to have been a misunderstanding upon the part of many persons in regard to the effect of the amount of crude oil in storage now upon the necessity of an extensive drilling campaign. The belief has been expressed that because the stocks of crude on hand at the beginning of this year—333,000,000 barrels—were the greatest ever held in the history of the industry, the oil men could sit back serenely at this time and not inaugurate drilling campaigns.

Crude Stocks Less Than Average

This is a serious mistake. Instead of having a big surplus of crude oil on hand at this time, the stocks in reality are nearly 5 per cent less than the average the past 15 years in relation to consumption. In other words, the amount of crude petroleum in storage throughout the United States on January 1 of this year represents only 39 per cent of the indicated requirements for this year, whereas during the past 15 years, the amount of crude on hand at the first of each year has averaged 43.7 per cent of the requirements for the year.

PRODUCTION IN THE UNITED STATES

Estimated daily average production in the oil fields of the United States for the week ended March 15, and a comparison with the previous week follows:

Fields	March 15	March 8
Oklahoma—Northern Fields:		
Tonkawa	37,345	38,050
Burbank	93,585	96,550
Other Osage Fields	32,125	31,850
Cushing and Shamrock	23,740	23,720
Bristow and Eastern Bristow	47,200	47,425
Northern Miscellaneous	93,575	93,050
Southern Fields:		
Healdton	16,400	16,470
Hewitt	21,200	21,625
Southern Miscellaneous	32,225	31,580
Total Oklahoma	397,395	400,320
Northern Louisiana	50,280	49,625
Arkansas—		
Eldorado and Calion	13,625	14,300
Smackover Light	26,915	26,300
Smackover Heavy	79,100	75,000
Stephens	4,700	4,700
Total Arkansas	124,340	120,300
North Central Texas	116,785	111,485
East Central Texas (Mexia, Currie, Corsicana, Powell)	180,735	179,880
Kansas	69,325	70,200
Total Mid-Continent Area	938,860	931,810
Gulf Coast and Southwest Texas	114,365	94,700
Eastern	101,275	103,950
Wyoming-Montana	126,605	130,795
California—		
Santa Fe Springs	93,000	100,000
Long Beach	213,000	214,000
Huntington Beach	58,000	58,000
Torrance	35,000	32,000
Remainder of State	245,000	240,000
Total California	644,000	644,000
Total United States	1,925,105	1,905,255

Increase, 19,850 Barrels

Many persons seem prone to view the amount of crude in storage solely from the angle of millions of barrels without considering it in relation to the needs of the country. Fifteen years ago, 333,000,000 barrels of crude in storage would have been a vast quantity. In 1910, that amount would have represented a supply for one year and nine months based on the 1910 consumption. But it only represents about 142 days' supply based on indicated consumption for this year. Crude stocks should be considered in the light of future needs, not on past consumption. Consequently, present stocks are below the average for the past 15 years and the need for greater stocks is growing steadily.

The best indication of what the oil men themselves think of the present situation is the millions of dollars paid on Tuesday and Wednesday of this week for leases in the Osage Nation, or Indian lands in the Burbank Field. When a company pays about $2,000,000 for the privilege of drilling for oil on 160 acres of land, knowing in addition that if it is fortunate enough to procure production it will have to pay a heavy royalty on the oil, there can be very little doubt but that that company feels there will be a great need for oil in the future. When it is realized it costs about $35,000 to drill a well in the Burbank Field, some estimate of the expense attached to buying leases and drilling in that area can be made.

Another angle of the situation which should not be overlooked is the fact it is doubtful if such enormous prices would be paid for such small tracts of ground if the buyers did not believe the price of crude oil would go much higher than it is at this time. At $2 a barrel for crude and a one-sixth royalty to be paid, it would require a long time for a $2,000,000 lease to pay itself out when the cost of drilling and operation is added.

But the fact remains the oil men, thinking of the future needs of the consuming public, have risked millions of dollars in new efforts to obtain crude oil. That great quantities of this oil will be needed, there is absolutely no doubt. More will be needed than the Burbank Field will be able to produce. It will require intensive effort in every producing field of the United States to maintain production at its present level and it will be necessary for the wildcatter to be more active probably, than ever before in his career.

Operations Are Increasing

Weather conditions have handicapped operations in many sections where development work was beginning to show a material increase. In many parts of the Eastern territory field operations have been held up on this account and the West suffered especially during the past week from severe storms with heavy falls of snow. Kansas, which was taking the lead in new operations and gave promise of showing a substantial increase in its production, was in the midst of a blizzard and snow storm during last week which put a stop to new work being done. However, activity is only postponed until the weather clears and roads again become passable.

The activity in Kansas is not confined to any particular section, old producing areas of the State getting a good play while new sections in the western part were beginning to attract considerable attention because of the promising possibilities, before much of the work was held up by the weather.

A good gain in production was recorded in the North and North Central areas of Texas during the past week while the Luling Field in southwest Texas reported a production of 21,000 barrels a day. The Powell Field showed an increase of just 1,000 barrels a day and it is not believed the big production there will hold up very long. The small area which caused such a foror two weeks ago is still providing some good wells and one well in the field started making 350 barrels an hour during the past week but operators do not expect any further material increases in output such as occurred during the past two weeks.

This Week and Next in the Oil Business

American Petroleum Institute, Through President O'Donnell, Issues Statement On Oil Situation. Bedford On Research

By L. M. Fanning

Thomas A. O'Donnell, president of the American Petroleum Institute, has issued a statement on the naval reserve controversy. Careful to withhold judgment on those primarily involved in the Washington developments, Mr. O'Donnell says the petroleum industry desires that the facts be made clear, the responsibility fixed and the guilty, if any, punished. The integrity of the American petroleum industry is beyond question, he declares, pointing out that 97 per cent of the industry is not involved in the charges.

INSTITUTE STATEMENT

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This is the first statement issued by the Institute since the naval reserve disclosures captured the front pages of the country's newspapers. While primarily designed to put the case of the industry before the people, the statement has peculiar significance to the industry itself in its reflection of the seriousness with which the leaders of the business view the possible effect of Washington developments upon the industry. "It is unthinkable," Mr. O'Donnell says, "that because of the alleged corruption involving a handful of men in government service and the petroleum business, that the public confidence in a great industry should be destroyed by reckless charges, and the destruction of that industry threatened through dangerous agitation or by impracticable supervision."

THREAT AGAINST INDUSTRY

* * *

"The integrity of the American petroleum industry is beyond question. It is distinctively American, and world wide in its ramifications. Those engaged in the business represent American standards and are average American citizens, no better and no worse than any other part of our economic life," Mr. O'Donnell says. "Its healthy and prosperous development is of the utmost importance to all of the American people, and it must have their confidence and cooperation in order to meet our industrial necessities and maintain the present predominant place of the industry in the affairs of the world. It is the real reserves in peace and war. Its efficiency, loyalty and integrity were shown in the great war, during which it proved itself 100 per cent efficient in furnishing the necessary supplies both at home and abroad and without profiteering. Ninety-seven per cent of the oil industry is not involved in the charges of fraud at Washington. Sixteen thousand companies and individuals with millions of stockholders, produced more than 2,000,000 barrels of oil per day during the last year in the United States. The companies holding the leases about which the controversy is raging produced not to exceed 3 per cent of the total production in this country. It is unthinkable that because of the alleged corruption involving a handful of men in Government service and the petroleum business, that public confidence in a great industry should be destroyed by reckless charges, and the destruction of that industry threatened through dangerous agitation or by impracticable supervision.

IMPORTANCE TO PEOPLE

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"The policy of maintaining naval reserves against a possible shortage in the future is sound if properly created so they can be maintained as reserves, and in my judgment is approved by an overwhelming majority of the oil men of America, but the administration of this policy has been carried out on lines inimical to the public interest through the leasing of property set aside for such a purpose in secrecy without the knowledge either of the public or the oil industry. Secret disposition of any kind of government property is dangerous, offering opportunities for favoritism and corruption and creating suspicion in the public mind. If the simple precept 'do public business in the open' had been followed, active competitive conditions in the petroleum industry would have been effective without possibility of scandal.

QUESTION OF LEASES

"Some of the so-called naval reserves were created in districts and under conditions where it was impossible to carry out the purpose for which they were intended, interlaced as they were with privately owned lands in an active state of development. As to the practicability of the project, the oil industry was not consulted, and advice offered at the time of their creation was ignored.

"Nevertheless they became Government property subject as they were to drainage from privately owned lands thus ultimately necessitating their operation if their full value was to be secured.

* * *

"It is only fair to say that, in view of actual developments, the commercial value of the leases made has been greatly exaggerated, and many well informed in the petroleum industry seriously doubt they will eventually prove profitable to the operators, and there is little criticism as to the terms of the leases from those familiar with the subject.

FUNDAMENTALS INVOLVED

"It is not for me to condemn or uphold the men involved. As American citizens it is the right of these men that this question be settled in an American way by a fair trial and in accordance with due process of law.

"There is no difference in character between the American oil man and the American citizen engaged in other activities. The petroleum industry is asking as other good citizens are, whether there has been an assault upon representative government, whether high officials and individuals identified with private enterprise have been faithless to the fundamentals of democracy. The petroleum industry desires that the facts be made clear, the responsibility fixed and the guilty, if any, punished."

* * *

A. C. Bedford, chairman of the board of the Standard Oil Co. (New Jersey) requested to comment on the advisability of establishing a national petroleum institute of research, offers objection to the plan mainly on the ground that such an institute offers no better means than those existing for the training of men capable of undertaking research work and that it would not bridge the gap as represented between the results of fundamental research and the practical utilization of this research in industry.

BEDFORD ON RESEARCH

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"There cannot be two views on the value of scientific research," Mr. Bedford says. "To oppose in principle the idea that the materials, forces, processes, and equipment of industry should be the subject of that careful study by trained investigators which is called 'scientific research' would stamp any industrial leader as out of sympathy with the spirit of civilization. The criticism here offered does not question the principle involved, but the advisability of proceeding by the road suggested in the editorial rather than by other existing or possible roads.

VALUE OF RESEARCH

"Of all human activities, none is more individualistic than scientific research, and none perhaps loses more and gains less by attempted centralization. The more men, and the higher calibre of men, engaged in research, the faster human knowledge progresses. With the progress of human knowledge, industry grows.

* * *

"Fundamental research work, which is of the most important kind and of the broadest general value, can be conducted anywhere by any group of men of the necessary inherent ability and proper training, without regard to their affiliation, or lack of affiliation, with industrial organizations. The things which stand primarily in the way of the maximum expansion of this kind of research are the limits of our means for properly selecting these men, providing for their training, and finally giving them proper surroundings for the favorable development of their careers.

TRAINING THE RESEARCH MAN

"Generally speaking, the academic field offers the best broad solution for all three of these problems. It is through the universities that the men must be selected and trained, and in the university faculties that, generally speaking, the most satisfactory career is found for them. Outside of the academic field, there are already far more bidders for the proper type of men to undertake scientific research work than there are really competent men of the highest caliber to undertake such work. The bidders for these men are the Government scientific bureaus and the large industrial organizations.

* * *

"An important angle of this matter is that there will often be a gap between the results of fundamental research and the practical utilization of this research in industry, which must be bridged before knowledge can be transmitted into action. The bridging of this gap, the putting into practice of the results of scientific research and the direction of this research in its more detailed angles toward solving the problems of the gap generally requires an intimate touch between the research man and the operator or managing executive, which can best be obtained where they are both employes of the same company in daily contact with each other.

BRIDGING THE GAP

"The suggested plan for a national petroleum institute of research does not fit into either of these generally accepted methods of meeting the situation. It will neither add to the productivity of research for the country in general, in the manner in which the university faculty aids by perpetuating and enlarging itself through the selection and training of research men as an incident to the joint conduct of education and research; nor will it aid directly in bridging the gap between research and industry, in the manner in which the research or development department of an industry now bridges that gap.

* * *

"The problem of promoting cooperative scientific research bearing on the problems of the petroleum industry and the application of that research to the actual conduct of the industry is a very difficult one; nor is it to be expected that any solution will ever be found which will be entirely without objection or which will be unanimously agreed upon.

INSTITUTE AND RESEARCH

"The American Petroleum Institute has given the problem its most careful consideration for several years past, without up to the present time finding any better method of attacking the matter than through executive cooperation with existing research laboratories of the industry, of universities and of the Government.

"I am rather of the opinion that the logical extension of this work along the lines on which the Director of Research of the Petroleum Institute has been working will constitute the best solution of the problem. I do not believe that a national petroleum institute of research according to the plan suggested would represent the most profitable use of the limited resources which we now have in research. While petroleum itself is always thought of as a resource the conservation of which requires our earnest attention, it is equally true that the men and the funds available for conducting scientific research also constitute a limited resource, the best utilization of which is the truest conservation."

Number of Wells Needed for Supply

Bulletin of American Petroleum Institute Calculates American Requirements by Pools, Eastern District as a Whole

The March 20 issue of the Bulletin of the American Petroleum Institute contains an interesting tabulation relative to the production of oil in the United States by months from August, 1922, to January, 1924, inclusive.

The purpose of the compilation is to show the number of wells required to produce certain approximate portions of, and the total daily average production of the United States during the period covered.

Starting on the left on the table, for example, the number of the most prolific wells required to produce approximately 500,000 barrels of oil per day is stated. The same method is followed in each of the columns. The grouping of the wells is in general by pools, it being impossible to obtain individual well performances. The eastern district has been grouped as a whole.

The average daily production per well of the wells in each group is in all cases stated.

An example will illustrate the method of reading the table. If the reader will turn to the column headed "Approximately 1,400,000 Bbls. Daily," he will find that in August, 1922, 78,651 of the most prolific producing wells of the country were required to yield approximately 1,400,000 bbls. of oil a day, and that in October, 1923, for example, only 6,464 wells were required to produce an equal amount of oil, but that in January, 1924, the number of wells required had increased to 21,479.

The 1,400,000 bbls. referred to is not the total daily average production of oil in the United States. In order to find the total production, the total number of wells producing, and the daily average production per well, the reader should look at the figures opposite each month in the respective columns. For example, in the case of August, 1922, the total production was 1,530,315 bbls. per day from 280,068 wells, with a daily average production per well of 5 bbls.

	Approximately 500,000 Bbls. Daily			Approximately 750,000 Bbls. Daily			Approximately 1,000,000 Bbls. Daily		
	Actual Barrels	No. of Wells	Av. Daily Production per Well	Actual Barrels	No. of Wells	Av. Daily Production Per Well	Actual Barrels	No. of Wells	Av. Daily Prod'tion per Well
August, 1922	494,049	2,582	191	752,990	6,681	113	995,372	14,749	67
September	522,016	2,745	190	751,359	6,209	121	1,001,306	14,343	70
October	475,438	2,134	223	751,674	5,239	143	999,012	12,605	79
November	468,766	1,647	285	740,886	4,302	172	1,009,617	11,116	91
December	546,932	1,528	358	750,743	3,345	224	971,011	6,884	141
January, 1923	498,207	1,059	471	757,100	3,365	225	983,464	6,962	141
February	512,251	858	597	728,149	2,684	271	999,353	6,426	156
March	487,066	565	862	758,073	2,333	325	1,004,194	5,330	188
April	460,311	420	1,096	773,341	2,019	383	998,559	4,310	232
May	493,482	474	1,041	725,795	1,552	468	1,003,289	4,171	241
June	543,381	514	1,057	795,865	1,795	443	1,041,383	3,900	266
July	495,871	379	1,308	735,935	1,135	648	1,055,427	3,075	343
August	537,340	420	1,279	664,457	717	927	1,004,642	2,706	371
September	556,773	499	1,116	669,813	802	835	994,459	2,522	394
October	504,081	537	939	818,824	1,350	607	1,047,927	2,513	417
November	530,463	798	665	823,016	1,810	455	1,004,036	3,101	324
December	505,325	1,001	505	810,644	3,829	212	1,022,233	6,591	155
January, 1924	482,505	1,259	383	762,996	4,085	187	1,018,098	7,893	129

	Approximately 1,100,000 Bbls. Daily			Approximately 1,200,000 Bbls. Daily			Approximately 1,300,000 Bbls. Daily		
	Actual Barrels	No. of Wells	Av. Daily Production per Well	Actual Barrels	No. of Wells	Av. Daily Production Per Well	Actual Barrels	No. of Wells	Av. Daily Prod'tion per Well
August, 1922	1,099,593	20,535	54	1,206,586	30,369	40	1,296,815	41,448	31
September	1,100,595	19,247	57	1,203,619	27,549	44	1,300,749	38,556	34
October	1,101,968	17,059	65	1,200,979	23,522	51	1,302,100	33,839	38
November	1,107,374	15,163	73	1,198,855	19,935	60	1,301,596	28,643	45
December	1,097,192	10,705	102	1,195,282	15,029	80	1,301,525	20,843	62
January, 1923	1,098,770	10,427	105	1,186,361	14,280	83	1,299,690	20,378	64
February	1,105,318	9,348	118	1,203,456	13,030	92	1,301,139	17,961	72
March	1,097,372	7,548	145	1,202,319	10,691	112	1,288,287	14,390	90
April	1,103,871	5,772	191	1,195,254	7,906	150	1,301,658	10,930	119
May	1,104,401	5,419	204	1,203,639	7,316	165	1,319,727	10,545	125
June	1,100,944	4,514	244	1,198,749	5,680	211	1,293,175	7,511	172
July	1,107,571	3,472	319	1,230,014	4,571	269	1,298,419	5,320	244
August	1,112,990	3,596	310	1,245,455	4,922	253	1,310,775	5,619	233
September	1,100,549	3,475	317	1,198,370	4,435	270	1,295,132	5,534	234
October	1,077,495	2,743	393	1,181,762	3,741	316	1,259,452	4,610	273
November	1,101,002	4,151	265	1,181,411	5,124	231	1,314,672	6,836	192
December	1,098,241	7,699	143	1,184,147	9,606	123	1,309,696	13,486	97
January, 1924	1,100,543	9,537	115	1,193,957	12,492	96	1,298,812	15,853	82

	Approximately 1,400,000 Bbls. Daily			Approximately 1,500,000 Bbls. Daily			Approximately 1,600,000 Bbls. Daily		
	Actual Barrels	No. of Wells	Av. Daily Production per Well	Actual Barrels	No. of Wells	Av. Daily Production Per Well	Actual Barrels	No. of Wells	Av. Daily Prod'tion per Well
August, 1922	1,401,752	78,651	18	1,535,315	280,068	5	.....	.....	...
September	1,401,316	59,354	24	1,556,371	280,316	6	.....	.....	...
October	1,407,259	49,863	28	1,484,149	102,159	15	1,598,148	280,159	6
November	1,401,772	40,732	35	1,499,241	66,182	23	1,638,296	280,549	6
December	1,397,720	29,364	48	1,500,686	42,218	36	1,601,530	79,617	20
January, 1923	1,403,280	29,039	48	1,499,882	40,604	37	1,599,916	65,397	24
February	1,410,342	25,682	55	1,498,695	34,811	43	1,604,594	52,319	31
March	1,398,631	20,295	69	1,508,946	29,721	51	1,600,968	40,557	39
April	1,404,996	15,468	91	1,501,646	20,583	73	1,615,958	29,928	54
May	1,397,177	13,434	104	1,500,381	18,192	82	1,599,896	24,682	65
June	1,436,714	11,386	126	1,500,555	13,674	110	1,602,918	18,618	86
July	1,402,075	6,843	205	1,543,526	10,617	145	1,600,095	12,455	128
August	1,400,353	7,100	197	1,544,678	11,049	140	1,607,900	13,093	123
September	1,414,812	7,193	197	1,486,943	8,779	169	1,594,803	11,928	134
October	1,409,119	6,464	218	1,510,336	8,385	180	1,601,342	10,962	146
November	1,394,813	8,154	171	1,533,393	11,840	130	1,601,011	14,186	113
December	1,394,784	16,793	83	1,501,926	22,983	65	1,605,710	32,188	50
January, 1924	1,404,659	21,479	65	1,501,455	29,156	51	1,605,189	40,860	39

	Approximately 1,700,000 Bbls. Daily			Approximately 1,800,000 Bbls. Daily			Approximately 1,900,000 Bbls. Daily		
	Actual Barrels	No. of Wells	Av. Daily Production per Well	Actual Barrels	No. of Wells	Av. Daily Production Per Well	Actual Barrels	No. of Wells	Av. Daily Prod'tion per Well
August, 1922	.....	.....	...	.....	.....	...	.....	.....	...
September	.....	.....	...	.....	.....	...	.....	.....	...
October	.....	.....	...	.....	.....	...	.....	.....	...
November	.....	.....	...	.....	.....	...	.....	.....	...
December	1,722,055	281,837	6	.....	.....	...	.....	.....	...
January, 1923	1,741,093	282,216	6	.....	.....	...	.....	.....	...
February	1,674,472	104,001	16	1,778,508	282,591	6	.....	.....	...
March	1,699,843	64,810	26	1,845,026	283,170	7	.....	.....	...
April	1,709,190	40,672	42	1,801,284	60,934	30	1,951,784	283,132	7
May	1,696,667	34,060	50	1,788,638	46,927	38	1,883,819	105,007	18
June	1,700,576	24,877	68	1,803,319	34,666	52	1,899,846	48,109	39
July	1,697,299	16,933	100	1,798,995	23,200	78	1,896,729	32,492	58
August	1,697,601	17,140	99	1,799,799	23,975	75	1,904,364	34,671	55
September	1,697,702	15,739	108	1,801,793	22,136	81	1,894,848	30,384	62
October	1,704,248	14,392	118	1,799,617	19,174	94	1,904,678	27,343	70
November	1,704,107	19,013	90	1,799,981	25,492	71	1,904,777	36,210	53
December	1,709,830	45,461	38	1,801,883	70,461	26	1,932,074	284,921	7
January, 1924	1,702,002	59,096	29	1,760,202	109,159	16	1,854,976	284,559	7

	Approximately 2,000,000 Bbls. Daily			Approximately 2,100,000 Bbls. Daily			Approximately 2,200,000 Bbls. Daily		
	Actual Barrels	No. of Wells	Av. Daily Production per Well	Actual Barrels	No. of Wells	Av. Daily Production Per Well	Actual Barrels	No. of Wells	Av. Daily Prod'tion per Well
August, 1922	.....	.....	...	.....	.....	...	.....	.....	...
September	.....	.....	...	.....	.....	...	.....	.....	...

(Continued on Page 32)

Need No Legislation On Gas Conservation Is Belief in Monroe

SHREVEPORT, La., March 17.—Preliminary investigations conducted at Monroe by H. W. Bell, supervisor of the minerals division of the Louisiana State Conservation Department, and a committee composed of representatives of leading gas interests, appointed by him, have resulted in expression of the belief that the situation can be handled by the conservation department without resorting to legislation.

Considerable agitation has developed among the business interests in the Monroe gas territory owing to the diminishing gas pressure and productiveness of the wells and it has been determined to place full and complete data in the hands of the conservation department and legislators, with a view to taking measures to curb drilling operations and otherwise conserve the gas supply in this district.

The investigation has revealed that there were 121 producing gas wells drilled during the past year, nearly half as many as had been drilled during the entire previous life of the field. The potential capacity of the field is estimated at 2,982,383,000 feet, and the present daily consumption is given at 364,874,028 feet. Most of the gas is being used in the manufacture of carbon black.

A group of business men from Texas, Louisiana and Arkansas, headed by B. F. Reeves, is planning the construction of a carbon plant to be located within a few miles of Camden, Arkansas.

Group 3 Market Still Slow But Steady

Increase in Stocks Normal for Season. Refiners Optimistic Comparing Conditions With Year Ago. California No Longer Menace

By C. O. Willson

With lower prices where there were changes in any products except cylinder stocks, the past week in the Group 3 (Oklahoma) refined market brought few developments of special interest or which indicated any important shifts in conditions as they have existed for several weeks. Gasoline, especially the domestic motor fuel grades, continued slow and the same might be said of almost all other products. The demand for cylinder stocks is the one bright spot in the market but since only a few plants manufacture them, the price advance is of no general importance.

Stormy weather throughout the Middle West area continued during the past week. Despite this fact there were indications of slight improvement in the domestic demand. This improvement was spotted and in the aggregate was not sufficient to have any influence on the open market. It served, however, to encourage a few refiners who were able to move a little material on their marginal contracts. Jobbers, in probably a majority of cases, are several days to several weeks behind in taking out orders as provided in these contracts and the resulting accumulation of gasoline at the refineries has been the most important factor bringing about the decline in the open market.

The situation in regard to gasoline consumption throughout the marketing territory of Group 3 has been explained in these columns several times recently and there is nothing new to add. Reports reaching Group 3 from jobber customers in the Middle Western States show that February in that area, from the standpoint of gallonage, was the worst in recent years. March to date has shown no improvement.

Expect Better Year

Despite the situation of the past two months it can be said that a majority of refiners are still expecting a far better year than that of 1923 although for the first three months, their losses are generally larger. Although there are a few in both the refining and marketing ends inclined to be pessimistic, due to present conditions, a majority feel certain that the tragedy of last year will not be duplicated and the turn for permanent improvement is just around the corner. Several executives who keep in touch with market conditions not only in this group but the petroleum world generally are of the opinion that a definite turn for the better in gasoline markets may be expected by the end of the month. They feel certain that this will materialize just as soon as weather conditions show any improvement.

In this connection the report of the Bureau of Mines covering refinery operations up to February 1, given elsewhere in this issue, merits the attention of those who are endeavoring to gauge probable conditions over the next few months. The following tables are based on the January report of this year and that of 1923:

Stocks

January 31, 1923, compared with January 31, 1922.

Gasoline increased	42	per cent
Kerosene decreased	11	per cent
Fuel and gas oil decreased	4.3	per cent

January 31, 1924, compared with January 31, 1923.

Gasoline increased	19.9	per cent
Kerosene increased	14	per cent
Gas and fuel oil increased	20	per cent
Lubricating oils increased	1.6	per cent

These data briefly summarize conditions in regard to supply and demand as reflected in stocks at the present time and a year ago. Probably the most noteworthy feature of the comparison lies in the fact that while gasoline stocks a year ago were 42 per cent greater than in 1922, this year they were only 19.9 per cent greater than a year ago.

Increase in Stocks Normal

When the stocks this year are considered with the fact that January gasoline production was 12.1 per cent greater than last year with a 13.2 per cent increase in demand over a year ago it will be seen that the increase in stocks is normal. A year ago, when for several months the stocks were 10 per cent greater than the same months of the previous year, a situation in regard to supply and demand was indicated which resulted in the demoralization of the market over a large part of the year.

It is true that there is considerable gasoline of a distress character on the market at the present time and has been for several weeks. But the data just quoted show that, based on a 13.2 per cent increase in demand, there is not the quantity there was at the end of January of last year. When the Bureau of Mines report for February is made public it will probably show a substantial increase in gasoline stocks over January but it is practically certain that the top-heavy situation of last year will not be repeated. There is the further fact—as many market observers have pointed out—that there is no California with a growing gasoline output to flood the market later in the spring and summer as there was last year. As indicating the decreasing importance of California in the gasoline market according to the January report of the Bureau of Mines, the western refineries produced 16 per cent of the total for the entire United States whereas last year they produced as high as 20 per cent of the total. California throughout 1924 will probably have more gasoline than can be consumed on the west coast but it is exceedingly important to the gasoline market generally that the amount of this surplus is decreasing rather than increasing.

Other Stocks Compared

The tables just given are also interesting when considered in the light of known market conditions for other products. The table comparing stocks at the end of January, 1923, with the same date in 1922 shows that kerosene and fuel and gas oil stocks had declined. This year kerosene stocks at the end of January were 14 per cent greater than a year ago and gas and fuel oil stocks 20 per cent greater.

It will be recalled that last year the market for fuel and gas oils and kerosene including distillates was generally satisfactory. That is, prices were obtained throughout the year in line with normal years and all that could reasonably be expected in view of the crude costs. This was due to the fact that the year started off with a favorable situation in regard to supply and demand and continued throughout the greater part of the year.

It is apparent that the same cannot be said for the start of this year. The 14 per cent increase in kerosene stocks and the 20 per cent increase in gas and fuel oils on January 31 would tend to support the contention of some that while the gasoline price situation this year will undoubtedly show improvement over last year, it will occupy a lone position. Refiners are not accustomed to a strong market in all the products they manufacture at any one time and if they lose part of what they gain in gasoline in the remaining products, the situation will not be without precedent.

Kerosene Slumping

Kerosene prices have been slumping for several weeks and fuel and gas oil prices are also lower despite the higher crude prices. The situation in regard to supply and demand given in the Bureau of Mines reports undoubtedly explains this development which came as a surprise to many. This situation is due primarily to the increase in supply rather than the falling off in demand which has shown an average increase. Part of this enlarged supply has been due to the fact that refiners during the low gasoline market increased their kerosene recovery and made no attempt to secure a maximum gasoline recovery. This situation will obviously be changed if the gasoline market improves and this would tend to reduce the supply of all products except the gasoline.

However, the Government figures show that large stocks have been accumulated and with the season of maximum consumption for fuel oil, gas oil and kerosene over it will probably be some time before they again occupy a strong market position.

Gasolines and Naphtha

The only buying of note in gasoline was confined to the export trade. The Sinclair Refining Co. continued to buy small quantities of 64-66, 375, both in Group 3 and North Texas. The Carter Petroleum Co. also bought a small amount. These companies and the Atlantic Refining Co. are known to have made inquiries for New Navy for export. So far as known no actual orders have been placed. The Sinclair company has been forced to raise its price on the 64-66 to 13¾. It is understood that the New Navy offers were around 11 cents for delivery early in April. There are export buyers other than those mentioned who are keeping in constant touch with market developments in Group 3 and other parts of the Mid-Continent Field. Occasionally there are reports of purchases by them. If these purchases actually materialize, however, they are not large enough to affect the market. There exists a general opinion in Group 3 that before the domestic consumption gets under way, these export buyers will attempt to make further substantial purchases. These purchases, although not large at any one time, have been the life savers of the gasoline market during the past six weeks and a continued movement to export terminals will greatly aid in a rapid price recovery next month.

The export buying of 64-66 has added

(Continued on Page 151)

REFINED MARKET BAROMETER

Little change noted in refined market situation over United States during week. Unseasonable weather, curtailing motoring, keeps gasoline consumption at low point generally except in districts where distress product forces slight reductions. Export purchases lend encouragement to higher gravities. Other grades, including New Navy and naphthas show slight reductions where changes are made. Kerosene weaker due to large supply and small demand. Natural gasolines easier with blends bringing slightly reduced prices. Distillates, gas oil and fuel oils reported slow with prices merely steady where fractional reductions were not made. Wax one of firmest of refined products with advances reported recently. Steam refined cylinder stocks show improvement; bright stocks are firm; neutrals steady and zero test lubricants hold firm to former quotations. Tank wagon situation and crude oil markets unchanged.

Mid-Continent—With exception of cylinder stocks which are stronger, Mid-Continent refined products are slow, or merely steady to prices of previous week. Stormy weather continues, further reducing demand for gasoline. Jobbers are behind in taking out motor fuel on contracts. March shows no improvement over February in consumption. Refiners still optimistic, when comparing present situation with that of same period in 1923. Increase in stocks is considered normal. California menace now abated. Kerosene prices slumping. Gas oil and fuel oils show lower tendencies. Export buying of 64-66, 375 only feature in gasoline market during week. Price strengthens with demand. Other grades show little change. Blenders fill tanks. Distillate stocks are allowed to accumulate. One refiner sells 100 cars cylinder stocks during past three weeks, advancing prices with each order.

Atlantic Seaboard—Refined oil markets firm with optimism prevalent. Price advances predicted. Kerosene, gas oil and fuel oils strong. Increase in refined oil stocks not alarming. Prices stationary. Mexican crudes advance due to growing scarcity. Export trade expected to show improvement due to activity in tanker charter market. Crude receipts show gain.

Chicago—Seasonal lull in purchasing refined products not unexpected. Accumulation of gasoline by jobbers cause of dull market. Supplies held in tank cars on tracks by many unable to unload into storage. Demand absent in all lines except New Navy and higher gravity gasolines. Export buying completed. Natural gasoline steady and blends quiet. Kerosene demand improved. Distillate consumption shows remarkable decline. Fuel oil buying is slow. Lubricant consumption slower in some places with many refiners still reported sold up. No change in tank wagon situation.

Pennsylvania—Refined market, in general, shows satisfactory characteristics. Kerosene displays additional softness. Refiners unable to find reason for bad tone. Gasoline very soft due to bad weather. Refinery sales greatly decreased. Tank wagon deliveries show increase recently. Wax considered strongest item of refined goods. Steam refined stocks very strong. Export orders give assistance. Filtered stocks show increasing price tendencies also. Most refineries sold up on steam refined stocks. Neutral demand still easy.

Gulf Coast—Refiners report slackened demand for Gulf Coast zero cold test lubricants. Some quotations made below prevailing market. Lower prices out of line with general market tendencies, due to fact that they were for only limited amounts and hurried movement. Situation expected to show stronger tone soon. Some refiners report fewer inquiries; others say market is active. Weather blamed for lull, with quotations in general unchanged during week.

Osage Sale Nets Indians 14 Millions

Two Tracts Bring Nearly $2,000,000 Each. Previous Records Broken At Two-Days Auction Conducted By Government

More millions were paid out for 160-acre leases at the twenty-second auction sale of leases on Osage Indian lands held in Pawhuska Tuesday and Wednesday, March 18 and 19, than history has ever before recorded in the oil business. The total of $14,193,800 which the Indians will receive as bonuses this week completely shattered the record of $10,889,700 established at the sale held June 28, 1922.

In the two days the sum of $13,485,400 went for tracts west of Range 8, and mostly in the Burbank Field. The 15 tracts in the Burbank Field, all adjoining producing acreage, sold for a total of $13,352,000 or an average of $890,133 per tract and over $5,563 per acre.

The record price of $1,600,000 paid by the Gypsy Oil Co. at a previous sale was broken four times in the course of the two days, and the new high mark of $1,990,000 was established by the Midland Co., when it bought Tract 626, the northwest quarter of Section 14-27-5. The Midland is a producing subsidiary of the Empire Gas & Fuel Co.

The receipts of this week's sale brings the total amount of money paid to Osage Indians for bonuses to $90,929,924.36.

The entrance of the Midland Oil Co., a Henry L. Doherty company, in the competition for Burbank tracts was another great surprise to many, while it was not expected that the Cosden Oil & Gas Co. had any plans that would call for record-breaking prices for leases, yet the Midland represented by Herbert R. Straight, paid $1,580,000 for No. 308, the southeast quarter of Section 13-27-5, and the Cosden Oil & Gas Co., represented by E. R. Perry and George O. Moody, bought the highest priced piece of the day, when it was awarded Tract No. 310, the southwest quarter of Section 14-27-5, for $1,955,000. The conservative Prairie Oil & Gas Co. bought Tract 309, the southwest quarter of Section 13-27-5, at its bid of $1,825,000. The Cosden Oil & Gas Co., following its purchase of Tract 310, bought Tract 311, the southwest quarter of Section 14-27-5, at $1,790,000.

Bidding on Tract 626 was started by the Phillips Petroleum Co. at an even million dollars. The Prairie Oil & Gas Co., the Mid Kansas Oil & Gas Co. and the Midland Oil Co. went at it hammer and tongs. The Prairie stayed up to $1,975,000, but the Midland shot the bid up to $1,990,000, the record making price and all the others fell back and let 'em have it.

There was little interest in most of the stuff offered east of Range 8 on Tuesday. At long intervals through the day a tract would call for spirited bidding, and it tickled the crowd to see at one point the Superior Oil Co. (Standard Oil Co. of Kentucky) and the Dixie Oil Co. (Standard Oil Co. of Indiana) in hot competition for acreage. Many tracts failed to receive any bids whatever, and a large number of tracts were sold on the first bid of $500.

A number of new bidders showed up at this sale. Peter Admonson of Tulsa bought several tracts; Carroll Miller, trustee, of Pittsburgh was a frequent purchaser and Stewart & Baggaly of New York on the first day picked up over a dozen tracts on the east side, paying less than $10,000 for the batch, sometimes with no competition.

The only high price paid for acreage on the east side on Wednesday was by the Red Bank Oil Co. which was awarded Tract 560, the southwest quarter of Section 20-23-8, in the Hominy district, at its bid of $230,000, but there were more desirable east side tracts offered on the second day than the first and altogether they commanded much more money. On the first day the east side tracts brought $290,000 and on the second day $517,800.

STATEMENT OF INDIVIDUAL OSAGE LEASE SALES

Showing Date of Sale, Total Acreage Offered, Total Acreage Sold, and Total Amount Realized as Bonus

Osage Sale No.	Date	Acreage Offered	Acreage Sold	Total Amt. of Bonus
1	November 11, 1912	107,594	24,541	$ 39,436.00
2	September 29, 1913	12,049	10,132	498,182.58
3	April 30, 1916	17,280	14,377	2,057,600.00
4	June 20, 1916	3,020	2,483	1,169,280.78
5	May 31, 1917	9,120	8,160	1,947,600.00
6	November 12, 1917	20,621	19,869	1,677,200.00
7	February 14, 1918	32,160	25,440	1,275,500.00
8	May 18, 1918	51,400	38,980	1,180,575.00
9	November 9, 1918	43,040	34,720	3,350,200.00
10	March 5, 1919	21,000	20,520	2,790,925.00
11	June 6, 1919	39,251	38,451	3,884,925.00
12	October 6, 1919	35,310	34,670	6,056,950.00
13	February 3, 1920	31,613	30,173	3,056,950.00
14	May 18, 1920	31,783	31,303	2,851,900.00
15	October 12, 1920	36,677	36,877	3,993,750.00
16	June 14, 1921	26,588	25,918	4,559,100.00
17	December 12, 1921	36,414	35,665	7,261,600.00
18	March 2, 1922	37,184	33,467	3,949,950.00
19	June 28, 1922	34,660	33,220	10,889,700.00
20	January 18, 1923	34,073	24,231	6,215,700.00
21	April 5, 1923	33,790	22,640	8,029,100.00
22	March 18-19	100,305	49,416	14,193,800.00
	Total	795,132	596,252	$90,929,924.36

TRACTS 317 TO 633, SOLD WEDNESDAY, MARCH 19

East of Range 7

Tr. No.	Description	Acreage	Purchaser	Bonus
317	NW 22-22-12	160	Steinberger & Lucas	$ 500.00
318	SW 22-22-12	160	Steinberger & Lucas	500.00
319	NE 29-22-12	160	Passed.	
320	NW 29-22-12	160	Passed.	
321	NW 4-27-12	160	Passed.	
322	SW 4-27-12	160	Passed.	
323	NE 5-27-12	160	Passed.	
324	NW 5-27-12	160	Passed.	
325	SE 5-27-12	160	Passed.	
326	Fr. SW 5-28-12	133.32	Dye & Tomlinson	500.00
327	SE 4-28-12	160	Dye & Tomlinson	500.00
328	SE 5-28-12	160	Rex Oil & Gas Co.	500.00
329	SW 5-28-12	160	Passed.	
330	NW 9-28-12	160	Passed.	
331	SW 9-28-12	160	Passed.	
332	Fr. SW 15-28-12	133.18	Passed.	
333	SE 16-28-12	160	Passed.	
334	SE 17-28-12	160	Passed.	
335	SW 17-28-12	160	Passed.	
336	NE 21-28-12	160	Passed.	
337	SE 21-28-12	160	Passed.	
338	Fr. NW 22-28-12	133.30	Passed.	
339	Fr. SW 22-28-12	133.14	Passed.	
340	NW 31-28-12	160	Passed.	
341	SW 31-28-12	160	Passed.	
342	NE 32-28-12	160	Passed.	
343	NW 32-28-12	160	Dye & Tomlinson	500.00
344	SE 32-28-12	160	Passed.	
345	SW 32-28-12	160	Passed.	
346	NE 19-29-12	160	The Texas Co.	500.00
347	SE 19-29-12	160	Passed.	
348	SE 29-29-12	160	Passed.	
349	SW 29-29-12	160	Passed.	
350	NE 32-29-12	160	L. R. Davis	500.00
351	NW 32-29-12	160	Passed.	
352	SE 32-29-12	160	Mid-Kansas Oil & Gas Co.	600.00
353	SW 32-29-12	160	Bu'Vi'Bar Petroleum Co.	500.00
354	SW 7-20-11	160	Sand Springs Home	500.00
355	SW 29-20-11	160	Superior Oil Corp.	2,800.00
356	NE 30-20-11	160	Sand Springs Home	1,300.00
357	NE 7-25-8	160	Passed.	
358	SW 14-21-11	160	Passed.	
359	SE 19-21-11	160	C. W. Titus	1,000.00
360	NE 29-21-11	160	C. W. Titus	500.00
361	SE 29-21-11	160	Dye & Tomlinson	900.00
362	SW 29-21-11	160	C. W. Titus	2,700.00
363	NE 7-22-11	160	Passed.	
364	SE 14-26-8	160	Devonian Oil Co.	1,400.00
365	NE 22-22-11	160	Carrol Miller, Tr.	1,500.00
366	NE 10-25-11	160	Passed.	
367	NW 10-25-11	160	Bu'Vi'Bar Petroleum Co.	700.00
368	SE 14-26-11	160	Passed.	
369	NW 14-26-11	160	Passed.	
370	NE 22-26-11	160	Passed.	
371	NW 23-26-11	160	Dye & Tomlinson	500.00
372	SE 23-26-11	160	Passed.	
373	NW 25-26-11	160	Indian Territory Illum. Oil Co.	500.00
374	SE 25-26-11	160	Passed.	
375	SW 25-26-11	160	Passed.	
376	NW 35-26-11	160	Passed.	
377	NW 36-26-11	160	Passed.	
378	NE 2-27-11	160	Passed.	
379	NW 2-27-11	160	Passed.	
380	SE 2-27-11	160	Passed.	
381	SW 2-27-11	160	Passed.	
382	NE 6-27-11	160	E. C. Mullendore	2,100.00
383	SE 6-27-11	160	E. C. Mullendore	1,600.00
384	NE 10-27-11	160	Ramsey Oil Co.	500.00
385	SE 10-27-11	160	Passed.	
386	NW 11-27-11	160	Passed.	
387	SW 11-27-11	160	Passed.	
388	NW 15-27-11	160	Passed.	
389	SE 15-27-11	160	Passed.	
390	SW 15-27-11	160	Passed.	
391	NW 20-27-11	160	Passed.	
392	SW 20-27-11	160	Passed.	
393	NE 29-27-11	160	Mid-Kansas Oil & Gas Co.	1,200.00
394	NW 29-27-11	160	Bu'Vi'Bar Pet. Co.	500.00
395	NE 3-28-11	160	Indian Territory Illum. Oil Co.	1,500.00
396	NW 3-28-11	160	A. D. Simons	1,000.00
397	SE 3-28-11	160	Carroll Miller, Tr.	4,200.00
398	SW 3-28-11	160	A. D. Simons	2,800.00
399	NE 9-28-11	160	Beacon Oil Co.	500.00
400	NW 9-28-11	160	Beacon Oil Co.	500.00
401	NW 12-28-11	160	Passed.	
402	NE 17-28-11	160	Passed.	
403	NW 17-28-11	160	Passed.	
404	SE 17-28-11	160	Passed.	
405	SW 17-28-11	160	Passed.	
406	NE 21-28-11	160	Passed.	
407	SE 21-28-11	160	Passed.	
408	SE 23-28-11	160	Passed.	
409	SW 23-28-11	160	Passed.	
410	NE 25-28-11	160	Passed.	
411	NW 25-28-11	160	Passed.	
412	SE 25-28-11	160	Passed.	
413	SW 25-28-11	160	Passed.	
414	NE 31-28-11	160	The Texas Co.	1,100.00
415	SE 31-28-11	160	Empire City Co.	500.00
416	NE 32-28-11	160	Passed.	
417	NW 32-28-11	160	The Texas Co.	1,700.00
418	NW 24-29-11	160	Passed.	
419	SE 24-29-11	160	Beacon Oil Co.	500.00
420	SW 24-29-11	160	Passed.	
421	NW 28-29-11	160	L. R. Davis	500.00
422	SW 28-29-11	160	Passed.	
423	NW 31-29-11	160	Indian Territory Illum. Oil Co.	500.00
424	SW 31-29-11	160	Passed.	
425	NW 34-29-11	160	Indian Territory Illum. Oil Co.	3,200.00
426	SW 34-29-11	160	Indian Territory Illum. Oil Co.	2,100.00
427	NE 6-20-10	160	H. G. Gwinnup	800.00
428	NW 6-20-10	160	H. G. Gwinnup	500.00
429	SE 6-20-10	160	Alcorn Oil Co.	1,800.00
430	SW 6-20-10	160	Indian Territory Illum. Oil Co.	1,200.00
431	Fr. NE 7-20-10	63.50	Tidal Oil Co.	600.00
432	Fr. NW 7-20-10	68.95	Pensey Oil Co.	500.00
433	Fr. NE 16-20-10	154.30	Passed.	
434	Fr. NW 16-20-10	8.00	Passed.	
435	Fr. SE 16-20-10	140.40	Manton M. Wyvell	500.00
436	SE 9-21-10	160	Passed.	
437	NW 22-21-10	160	Passed.	
438	SW 22-21-10	160	Carroll Miller, Tr.	2,500.00
439	SE 24-21-10	160	Alcorn Oil Co.	3,000.00
440	SE 22-21-10	160	Passed.	
441	NE 20-22-10	160	Manton M. Wyvell	1,700.00
442	SE 20-22-10	160	Rupert Drilling Co.	500.00
443	NW 1-23-10	160	Passed.	
444	SE 1-23-10	160	Passed.	
445	SW 4-23-10	160	Rex Oil & Gas Co. & Pyramid Oil Co.	2,400.00
446	SE 10-23-10	160	E. L. Connelly, et al	900.00
447	SW 10-23-10	160	Roy Branstetter	3,100.00
448	NE 34-24-10	160	Rex Oil & Gas Co. & Pyramid Oil Co.	3,300.00
449	SW 3-25-10	160	Amerada Pet. Corp.	1,100.00
450	NE 4-25-10	160	Passed.	
451	NW 4-25-10	160	Passed.	
452	SE 4-25-10	160	Beacon Oil Co.	500.00
453	NE 15-25-10	160	Passed.	
454	NW 15-25-10	160	Passed.	
455	SE 15-25-10	160	Passed.	
456	SE 22-25-10	160	Passed.	
457	SW 22-25-10	160	Passed.	
458	SW 23-25-10	160	Passed.	
459	NW 8-26-10	160	Passed.	
460	SE 8-26-10	160	Passed.	
461	SW 8-26-10	160	Carroll Miller, Tr.	500.50
462	SE 11-26-10	160	Passed.	
463	NE 21-26-10	160	Passed.	
464	NW 21-26-10	160	Passed.	
465	SW 21-26-10	160	Passed.	
466	SE 35-26-10	160	Passed.	
467	SW 35-26-10	160	Passed.	

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Result of First Day's Sale of Osage Leases

TRACTS 1 TO 316, SOLD TUESDAY, MARCH 18
East of Range 7

Tr. No.	Description	Acreage	Purchaser	Bonus
1	NW 19-22-12	160	Passed.	
2	SW 19-22-12	160	Passed.	
3	NE 28-22-12	160	Knupp Oil Co.	$ 700.00
4	NW 28-22-12	160	Knupp Oil Co.	500.00
5	NW 33-22-12	160	Knupp Oil Co.	500.00
6	SW 5-27-12	160	Passed.	
7	NW 6-27-12	160	Passed.	
8	SW 6-27-12	160	Passed.	
9	SE 9-27-12	160	Passed.	
10	SW 9-27-12	160	Bid rejected.	
11	Fr. NW 3-28-12	148.56	Passed.	
12	NE 4-28-12	160	Passed.	
13	NE 5-28-12	160	E. M. Williams, Skiatook, Okla.	1,700.00
14	NW 5-28-12	160	Beacon Oil Co.	500.00
15	SE 7-28-12	160	Passed.	
16	SW 7-28-12	160	Passed.	
17	Fr. NW 15-28-12	132.60	Passed.	
18	NE 16-28-12	160	Passed.	
19	NE 17-28-12	160	Passed.	
20	NW 17-28-12	160	Passed.	
21	NE 20-28-12	160	Passed.	
22	SE 20-28-12	160	Passed.	
23	NW 29-28-12	160	Passed.	
24	SW 29-28-12	160	The Texas Co.	1,300.00
25	NW 30-28-12	160	The Texas Co.	500.00
26	SW 30-28-12	160	Passed.	
27	Fr. NW 34-28-12	131.36	J. J. Fitzstephens, Bartlesville, Ok.	900.00
28	Fr. SW 34-28-12	130.26	J. J. Fitzstephens, Bartlesville, Ok.	500.00
29	Fr. NW 15-29-12	22.75	F. M. Breene et al	500.00
30	Fr. SW 15-29-12	25.00	Prairie Oil & Gas Co.	500.00
31	SE 16-29-12	160	Prairie Oil & Gas Co.	1,700.00
32	SW 16-29-12	160	Passed.	
33	NW 30-29-12	160	Passed.	
34	SE 30-29-12	160	Passed.	
35	SW 30-29-12	160	A. D. Simon, Fairmont, W. Va.	700.00
36	SE 2-20-11	160	Dixie Oil Co.	3,300.00
37	NE 11-20-11	160	Superior Oil Corp.	4,700.00
38	SE 11-20-11	160	W. H. Gray, Tulsa	1,000.00
39	NE 12-20-11	160	Duffield & Howard, Tulsa	2,100.00
40	NW 12-20-11	160	Lorraine Pet. Co.	6,400.00
41	NE 13-20-11	160	A. D. Simon	1,300.00
42	SE 22-20-11	160	Bid not accepted.	
43	NE 8-21-11	160	Devonian Oil Co.	1,200.00
44	SE 8-21-11	160	Devonian Oil Co.	800.00
45	NE 18-21-11	160	Skelly Oil Co.	1,000.00
46	NE 21-21-11	160	Passed.	
47	SE 21-21-11	160	Passed.	
48	NW 1-22-11	160	Passed.	
49	SE 9-22-11	160	Carrol Miller, Tr., Pittsburgh, Pa.	800.00
50	NE 29-22-11	160	A. M. Meeks, Tulsa	800.00
51	NW 29-22-11	160	A. M. Meeks	2,100.00
52	SE 4-25-11	160	Passed.	
53	SW 6-25-11	160	Passed.	
54	NE 7-25-11	160	F. Harper, Oklahoma City	500.00
55	SE 9-26-11	160	Mid-Kansas Oil & Gas Co.	1,200.00
56	SW 9-26-11	160	Mid-Kansas Oil & Gas Co.	1,600.00
57	SW 18-26-11	160	Passed.	
58	NE 22-26-11	160	Dixie Oil Co.	2,700.00
59	NW 22-26-11	160	Oklahoma Eastern Oil Co.	900.00
60	SW 22-26-11	160	Passed.	
61	NE 26-26-11	160	Passed.	
62	SE 26-26-11	160	Passed.	
63	NE 27-26-11	160	Passed.	
64	NW 27-26-11	160	Passed.	
65	NE 5-27-11	160	Passed.	
66	NW 5-27-11	160	E. C. Mullendore	2,000.00
67	NE 9-27-11	160	Passed.	
68	NW 9-27-11	160	J. A. Johnson, Oklahoma City	500.00
69	NE 13-27-11	160	Peter Admondson, Jr., Tulsa	500.00
70	NW 13-27-11	160	Passed.	
71	SE 13-27-11	160	Passed.	
72	SW 13-27-11	160	Passed.	
73	NE 21-27-11	160	Indian Territory Illum. Oil Co.	1,000.00
74	SE 21-27-11	160	Duffield & Howard	500.00
75	NE 28-27-11	160	Duffield, Howard & Berlin	500.00
76	NW 28-27-11	160	Mid-Kansas Oil & Gas Co.	2,500.00
77	NE 2-28-11	160	Passed.	
78	NW 2-28-11	160	Indian Territory Illum. Oil Co.	500.00
79	SE 2-28-11	160	Passed.	
80	SW 2-28-11	160	Indian Territory Illum. Oil Co.	1,000.00
81	NE 5-28-11	160	Passed.	
82	NW 5-28-11	160	Passed.	
83	NE 7-28-11	160	Passed.	
84	SE 7-28-11	160	Passed.	
85	NW 8-28-11	160	Passed.	
86	SW 8-28-11	160	Passed.	
87	SW 13-28-11	160	Passed.	
88	SE 14-28-11	160	Passed.	
89	SW 14-28-11	160	Passed.	
90	NE 19-28-11	160	Passed.	
91	SE 19-28-11	160	Passed.	
92	NW 20-28-11	160	Passed.	
93	SW 20-28-11	160	Passed.	
94	NE 23-28-11	160	Passed.	
95	NW 23-28-11	160	Passed.	
96	NE 27-28-11	160	Passed.	
97	NW 27-28-11	160	Ramsey Oil Co., Caney, Kans.	500.00
98	SE 27-28-11	160	Howard, Duffield & Berlin	700.00
99	SW 27-28-11	160	Carrol Miller, Tr., Pittsburgh, Pa.	900.00
100	SW 29-28-11	160	The Texas Co.	1,800.00
101	SE 30-28-11	160	The Texas Co.	900.00
102	NW 13-29-11	160	Passed.	
103	NW 17-29-11	160	Winona Oil Co.	700.00
104	SE 23-29-11	160	Passed.	
105	SW 23-29-11	160	Pensy Oil Co., Tulsa	500.00
106	NE 26-29-11	160	L. C. Hivick, Oklahoma City	500.00
107	SE 27-29-11	160	Beacon Oil Co.	21,500.00
108	NW 30-29-11	160	Passed.	
109	SE 30-29-11	160	Passed.	
110	SW 30-29-11	160	Passed.	
111	NE 1-20-10	160	Sand Springs Home	500.00
112	SE 1-20-10	160	Carrol Miller, Tr.	1,000.00
113	NE 12-20-10	160	Sand Springs Home	900.00
114	SE 12-20-10	160	Sand Springs Home	1,700.00
115	NE 13-20-10	160	Carrol Miller, Tr.	1,200.00
116	NW 13-20-10	160	L. C. Hivick	800.00
117	Fr. NE 21-20-10	159.50	Frank M. Breene et al	500.00
118	Fr. NW 21-20-10	36.20	Frank M. Breene et al	500.00
119	NW 25-20-10	160	Peter Admondson, Jr.	500.00
120	SE 25-20-10	160	Peter Admondson, Jr.	500.00
121	SE 6-21-10	160	Frank M. Breene et al	500.00
122	SW 6-21-10	160	Frank M. Breene et al	500.00
123	SE 7-21-10	160	Passed.	
124	NW 25-21-10	160	C. W. Titus	1,700.00
125	NE 26-21-10	160	E. L. Connelly	2,500.00
126	NW 2-22-10	160	Indian Territory Illum. Oil Co.	3,400.00
127	SE 3-22-10	160	Beacon Oil Co.	2,500.00
128	NW 2-23-10	160	Gypsy Oil Co.	3,200.00
129	SW 2-23-10	160	Gypsy Oil Co.	5,200.00
130	SE 5-23-10	160	Ray Branstetter, Skiatook	3,300.00
131	NE 9-23-10	160	Carrol Miller, Tr.	2,500.00
132	SE 9-23-10	160	Rex Oil & Gas Co.	2,900.00
133	NE 2-24-10	160	Passed.	
134	SW 2-24-10	160	C. B. Peters	700.00
135	NE 3-24-10	160	C. B. Peters	1,300.00
136	NW 33-24-10	160	A. G. Oliphant	Bonus
137	NW 8-25-10	160	Passed.	
138	SE 8-25-10	160	Burlingame & Holm	
139	SW 8-25-10	160	Passed.	
140	NE 16-25-10	160	Passed.	
141	NW 16-25-10	160	Beacon Oil Co.	
142	SE 16-25-10	160	Passed.	
143	SW 16-25-10	160	Passed.	
144	NW 4-26-10	160	Passed.	
145	NE 5-26-10	160	Passed.	
146	NE 18-26-10	160	Carrol Miller, Tr.	
147	SE 18-26-10	160	Passed.	
148	SW 18-26-10	160	Passed.	
149	NW 20-26-10	160	Passed.	
150	SE 20-26-10	160	Passed.	
151	NE 35-26-10	160	Passed.	
152	NW 35-26-10	160	Passed.	
153	SE 7-27-10	160	Passed.	
154	NE 18-27-10	160	Passed.	
155	NW 18-27-10	160	Passed.	
156	SE 18-27-10	160	Passed.	
157	NE 6-28-10	160	Passed.	
158	SE 6-28-10	160	Passed.	
159	SE 21-28-10	160	Passed.	
160	SW 21-28-10	160	The Texas Co.	
161	NW 24-28-10	160	Passed.	
162	SW 24-28-10	160	Passed.	
163	NE 29-28-10	160	Bement Oil Corp., Terre Haute, Ind.	
164	NW 31-28-10	160	Amerada Pet. Corp.	
165	SE 34-28-10	160	Passed.	
166	SW 34-28-10	160	Passed.	
167	NE 13-29-10	160	Passed.	
168	NW 13-29-10	160	Passed.	
169	NE 20-29-10	160	Passed.	
170	NW 20-29-10	160	Passed.	
171	NW 28-29-10	160	Passed.	
172	SW 28-29-10	160	Passed.	
173	NW 32-29-10	160	Passed.	
174	SW 32-29-10	160	Passed.	
175	NE 12-21-9	160	Passed.	
176	SW 12-21-9	160	Passed.	
177	SE 20-21-9	160	Passed.	
178	NE 34-21-9	160	Passed.	
179	NW 34-21-9	160	Passed.	
180	SW 8-22-9	160	Superior Oil Corp.	
181	SE 14-22-9	160	T. I. Monroe	
182	SW 14-22-9	160	T. I. Monroe	
183	NE 24-22-9	160	Passed.	
184	NE 35-22-9	160	John Moodt & J. B. Olmsted	
185	NE 14-23-9	160	Passed.	
186	NE 16-23-9	160	Ernest McCarty	
187	NE 21-23-9	160	A. G. Oliphant	
188	SE 21-23-9	160	Indian Territory Illum. Oil Co.	
189	SE 27-23-9	160	Passed.	
190	SE 28-23-9	160	M. Grace Maxwell	
191	NE 5-24-9	160	Devonian Oil Co.	
192	NW 5-24-9	160	Devonian Oil Co.	
193	NE 8-24-9	160	Passed.	
194	SW 28-24-9	160	C. B. Peters et al	
195	SW 30-24-9	160	I. D. Simons & Stoner Bros.	
196	SE 1-25-9	160	Passed.	
197	SW 1-25-9	160	Passed.	
198	NW 8-25-9	160	Passed.	
199	NW 28-25-9	160	Devonian Oil Co.	
200	NW 32-25-9	160	Devonian Oil Co.	
201	NE 3-26-9	160	Passed.	
202	NW 3-26-9	160	Passed.	
203	SE 7-26-9	160	Passed.	
204	SW 7-26-9	160	Passed.	
205	NE 10-26-9	160	Passed.	
206	NW 10-26-9	160	Passed.	
207	SE 10-26-9	160	Passed.	
208	NE 19-26-9	160	Passed.	
209	SW 19-26-9	160	Passed.	
210	SW 31-26-9	160	Passed.	
211	NW 36-26-9	160	Passed.	
212	NE 1-27-9	160	Passed.	
213	NW 1-27-9	160	Passed.	
214	NE 6-27-9	160	Passed.	
215	NW 6-27-9	160	Passed.	
216	NE 10-27-9	160	Passed.	
217	SE 10-27-9	160	Passed.	
218	SW 17-27-9	160	Passed.	
219	NW 20-27-9	160	Passed.	
220	SW 22-27-9	160	Passed.	
221	SE 24-27-9	160	Passed.	
222	SW 24-27-9	160	Passed.	
223	SW 27-27-9	160	Passed.	
224	SE 28-27-9	160	Passed.	
225	NE 35-27-9	160	Passed.	
226	SE 35-27-9	160	Passed.	
227	NW 2-28-9	160	Bement Oil Co.	
228	SW 3-28-9	160	Passed.	
229	NW 10-28-9	160	Passed.	
230	SE 10-28-9	160	J. D. Mitchell, Pawhuska	
231	SW 10-28-9	160	Bement Oil Co.	
232	NE 22-28-9	160	George V. Labodie et al	
233	NW 23-28-9	160	Passed.	
234	NE 13-29-9	160	Passed.	
235	SE 13-29-9	160	Beacon Oil Co.	
236	NW 19-29-9	160	Beacon Oil Co.	
237	SW 19-29-9	160	Twin State Oil Co.	
238	NE 23-29-9	160	Twin State Oil Co.	
239	SE 32-29-9	160	Passed.	
240	NE 36-29-9	160	Tidal Oil Co.	
241	NE 6-22-8	160	Peter Admondson, Jr.	
242	SE 6-22-8	160	Passed.	
243	SW 15-22-8	160	Superior Oil Corp.	
244	NW 22-22-8	160	Bement Oil Co.	
245	SE 2-23-8	160	Bement Oil Co.	
246	SW 2-23-8	160	Superior Oil Corp.	
247	SE 27-23-8	160	Carrol Miller, Tr.	
248	NW 6-24-8	160	Superior Oil Corp.	
249	SE 6-24-8	160	G. V. Labodie	
250	NW 7-24-8	160	Riverland	
251	SW 17-24-8	160	G. V. Labodie	
252	NE 20-24-8	160	Atlantic Oil Producing Co.	
253	SE 24-24-8	160	Indian Territory Illum. Oil Co.	
254	NE 25-24-8	160	Tidal Oil Co.	
255	SW 4-25-8	160	Tidal Oil Co.	
256	SE 6-25-8	160	Indian Territory Illum. Oil Co.	
257	SE 7-25-8	160	C. F. Noble	
258	SW 21-25-8	160	C. F. Noble	
259	SE 35-25-8	160	Mid-Kansas Oil & Gas Co.	
260	NE 36-25-8	160	C. B. Creekmore & Wolfe	
261	SE 36-25-8	160	Devonian Oil Co.	
262	NE 11-26-8	160	Devonian Oil Co.	
263	NW 11-26-8	160	Martin Carricker	
264	NE 14-26-8	160	Stewart & Baggaly, New York	
265	SW 14-26-8	160	Stewart & Baggaly	
266	NW 17-26-8	160	Stewart & Baggaly	
267	NW 25-26-8	160	Stewart & Baggaly	
268	SE 27-26-8	160	Midland Oil Co.	
269	NE 34-26-8	160	Stewart & Baggaly	
270	NE 35-26-8	160	Stewart & Baggaly	
271	NE 8-27-8	160	Stewart & Baggaly	

(Continued on Page 143)

DRESSER

DRESSER COUPLINGS are adaptable to pipe installation of the smaller sizes as well as for the larger sizes. They are used on both short and long pipe lines, for the transportation of Gas, Water, Air and other fluids.

On this page are shown various designs of style 38 Steel Pipe Couplings which are made in all sizes even up to 40" and larger. They are used in connection with Plain or Threaded End Wrought Steel Pipe, Casing, Boiler Tubes or Cast Iron Pipe. Extreme small sizes are used in large quantities for service and meter connections.

S. R. Dresser Manufacturing Company

Bradford, Penna.

Dresser ~ Couplings ~ Dominate

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

GASOLINE AND NAPHTHA

CHICAGO DIST. (Based on Group 3)—	March 18		March 11		March 4	
50-52 450 end point (Naphtha)	.10	.10½	.10	.10½	.10	.10½
56-58 450 end point	.10¼	.10½	.10¼	.10½	.10	.10½
58-60 437 end point (New Navy)	.10⅜	.11	.10⅜	.11	.10½	.11
60-62 400 end point	.11⅜	.12	.11⅜	.12	.11⅜	.12¼
64-66 375 end point	.12⅜	.13	.12⅜	.13¼	.13	.13½
68-70 360 end point	.13½	.14	.13¾	.14	.13¾	.14¼
OKLAHOMA (Group 3)—						
50-52 450 end point (Naphtha)	.10	.10½	.10½	.10½	.10¼	.10¾
56-58 450 end point	.10¼	.10½	.10¼	.10½	.10	.10½
58-60 437 end point (New Navy)	.10½	.10¾	.10⅜	.11	.10¾	.11
60-62 400 end point	.11⅜	.12	.12	.12¼	.11¾	.12¼
64-66 375 end point	.13⅛	.13⅜	.13	.13¼	.13	.13¼
68-70 350-365 end point	.13¼	.13¾	.13½	.14	.13½	.14
KANSAS—						
58-60 437 end point (New Navy)	.10¾	.11¼	.11	.11½	.11	.11½
NORTH TEXAS—						
48-52 450 end point (Naphtha)	.10	.10¼	.10	.10¼	.10	.10½
50-52 440 end point (Naphtha)	.10¼	.10½	.10¼	.10½	.10¼	.10¾
56-58 450 end point	.10¼	.10½	.10¼	.10½	.10¼	.10½
58-60 437 end point (New Navy)	.10¾	.11	.10¾	.11	.10¾	.11
60-62 400 end point	.11⅜	.12¼	.11¾	.12¼	.11¾	.12¼
64-66 390 end point	.13	.13¼	.12⅝	.13	.12⅝	.13¼
64-66 375 end point	.13	.13¼	.13	.13¼	.13	.13½
68-70 360 end point	.13½	.13¾	.13¾	.14	.14	.14¼
NORTH LOUISIANA—						
56-58 450 end point	.10½	.11	.10½	.11	.10¾	.11
58-60 437 end point (New Navy)	.11	.11¼	.11	.11¼	.11¼	.11½
60-62 400 end point	.12	.12¼	.12¼	.12½	.12¼	.12¾
64-66 375 end point	.13¼	.13¾	.13½	.14	.13½	.14
64-66 390 end point	.12½	.13	.13	.13¼	.13¼	.13½
ARKANSAS—						
58-60 450 end point	.10¾	.11	.10¾	.11	.11	.11¼
58-60 437 end point (New Navy)	.11¼	.11½	.11¼	.11½	.11¼	.11¾
64-66 375 end point	.13	.13½	.13	.13½	.12¾	.13¼
ROCKY MOUNTAIN STATES—						
*58-60 437 end point (New Navy)	.13¾	.14	.14	.14¼	.14	.14¼
PENNSYLVANIA—						
52 Naphtha	.13½		.13¾		.13¾	
54 Naphtha	.13¾		.13⅝		.13⅝	
56 Gasoline	.14		.14		.14	
58 Gasoline	.14½		.14⅝		.14⅝	
60 Gasoline	.15¾		.15¾		.15¾	
62 Gasoline	.16½		.16½		.16½	
64 Gasoline	.17		.17		.17	
66 Gasoline	.18		.18		.18	
68-70 Gasoline	.19		.19		.19	

*Colorado points.

NATURAL GASOLINE

CHICAGO DIST. (Based on Group 3)—	March 18		March 11		March 4	
Grade A, 72-78, under 375 e.p., rec. 90%	.10	.10½	.10¼	.10½	.10	.10¼
Grade B, 76-82, 375 end point, rec. 85%	.09	.09½	.09¼	.09½	.09¼	.09½
Grade C, 80-88, 350 end point, rec. 78%	.08	.08½	.08	.08½	.08	.08½
OKLAHOMA (Group 3)—						
Grade A, 72-78, under 375 e.p., rec. 90%	.10	.10¼	.10	.10¼	.10	.10¼
Grade B, 76-82, 375 end point, rec. 85%	.09	.09¼	.09¼	.09½	.09¼	.09½
Grade C, 80-88, 350 end point, rec. 78%	.08	.08¼	.08¼	.08½	.08¼	.08½
Grade D, 88-92, 350 end point	.08	.08¼	.08	.08½	.08	.08½
NORTH TEXAS—						
Grade A, 72-78, under 375 e.p., rec. 90%	.09½	.09¾	.09½	.10	.09½	.10
Grade B, 76-82, 375 end point, rec. 85%	.08½	.08¾	.08¾	.09¼	.08¾	.09¼
Grade C, 80-88, 350 end point, rec. 78%	.07½	.07¾	.07¾	.08¼	.08	.08¼
NORTH LOUISIANA—						
Grade B, 72-78, under 375 e.p., rec. 90%	.09¾	.10	.09¾	.10	.10	.10¼
Grade C, 76-82, 375 end point, rec. 85%	.08¾	.09	.08¾	.09	.09	.09¼

MOTOR NATURAL GASOLINE (BLEND)

CHICAGO DIST. (Based on Group 3)—	March 18		March 11		March 4	
58-62 437 end point	.10	.10¼	.10	.10¼	.10	.10¼
60-62 450 end point	.10	.10¼	.10	.10¼	.10	.10¼
64-66 450 end point	.10	.10¼	.10	.10¼	.10	.10¼
OKLAHOMA (Group 3)—						
60-62 450 end point	.09¾	.10	.10	.10¼	.10	.10¼
64-66 437 end point	.09¾	.10	.10	.10¼	.10⅛	.10⅜
68-70 430-435 end point	.09¾	.10	.10	.10¼	.10	.10¼
NORTH TEXAS—						
58-62 440 end point	.09¾	.10	.10	.10¼	.10	.10¼
58-60 450 end point	.09¾	.10	.10	.10¼	.10	.10¼
PENNSYLVANIA—						
*60-62	.14¾		.15		.15	
*64-66	.14¾		.15		.15	
*66-68	.14¾		.15		.15	
*68-70	.14¾		.15		.15	

*At Sistersville, W. Va.

BURNING OIL

CHICAGO DIST. (Based on Group 3)—	March 18		March 11		March 4	
41-43 water white Kerosene	.04½	.04¾	.04¾	.05	.05	.05¼
42-44 water white Kerosene	.04¾	.05	.05	.05¼	.05½	.05¾
OKLAHOMA (Group 3)—						
41-43 water white Kerosene	.04½	.04¾	.04⅝	.07⅛	.04¾	.05
42-43 water white Kerosene	.04¾	.05	.04⅞	.05⅛	.05	.05¼
41-43 prime white Kerosene	.04¼	.04⅜	.04½	.05⅝	.04½	.04¾
KANSAS—						
41-43 water white Kerosene	.05	.05¼	.05¼	.05½	.05½	.05¾
ROCKY MOUNTAIN STATES—						
*40-42 water white Kerosene	.08¾		.09		.09	
NORTH TEXAS—						
41-43 water white Kerosene	.04½	.04¾	.05	.05¼	.05	.05⅜
41-43 prime white Kerosene	.04¼	.04½	.04⅝	.04⅞	.04⅝	.04⅞
40-42 prime white Kerosene	.04¼	.04½	.04⅝	.04⅞	.04⅝	.04⅞
42-44 water white Kerosene	.04¾	.05	.05¼	.05½	.05¼	.05⅝
NORTH LOUISIANA—						
41-43 prime white Kerosene	.05	.05¼	.05¼	.05½	.05½	.05¾
42-44 water white Kerosene	.05¼	.05½	.05½	.05¾	.05¾	.06
ARKANSAS—						
41-43 water white Kerosene	.05	.05¼	.05¼	.05½	.05½	.05¾
42-44 water white Kerosene	.05¼	.05½	.05½	.05¾	.05¾	.06
PENNSYLVANIA—						
43 Kerosene prime white	.07⅛		.07⅛		.07⅛	
45 Kerosene water white	.07½		.07½		.07½	
46 Kerosene water white	.08		.08		.08	
47 Kerosene water white	.08⅝		.08⅝		.08⅝	
36 Miners' Neutral	.08¾		.08¾		.08¾	
34 Neutral	.09¼		.09¼		.09¼	
34 Sundebloomed Neutral	.10¾		.10¾		.10¾	
300 Mineral Seal	.08¼		.08¼		.08¼	

*Colorado points.

FUEL OILS

CHICAGO DIST. (Based on Group 3)—	March 18		March 11		March 4	
24-26 Fuel Oil (sellers' cars, Group 3)	1.05	1.10	1.05	1.10	1.05	1.15
22-24 (El Dorado)	1.00	1.05	.95	1.00	1.00	1.05
18-20 (Smackover)	.95	1.05	.90	.95	.90	.95
32-36 Gas Oil	.03⅜	.03⅝	.03⅜	.03⅝	.03⅜	.03⅝
38-40 Straw distillate	.03¾	.04	.03¾	.04	.04	.04½
KANSAS—						
24-26 Fuel Oil	1.15	1.25	1.15	1.25	1.20	1.25
32-36 Gas Oil	.03½	.03¾	.03½	.03¾	.03⅝	.03⅞
38-40 Distillate	.04	.04¼	.04	.04¼	.04¼	.04½
OKLAHOMA (Group 3)—						
24-26 Fuel Oil (buyers' cars)	1.02½	1.07½	1.05	1.07½	1.05	1.10
24-26 Fuel Oil (sellers' cars)	1.05	1.10	1.05	1.10	1.07½	1.10
28-30 Fuel Oil (sellers' cars)	1.15	1.20	1.15	1.20	1.20	1.25
32-36 Gas Oil	.03	.03¼	.03⅛	.03⅜	.03¼	.03½
38-40 Straw distillate	.03½	.03¾	.03½	.03¾	.03⅝	.03⅞
NORTH TEXAS—						
24-26 Fuel Oil	1.10	1.20	1.10	1.20	1.20	1.30
26-30 Fuel Oil	1.20	1.30	1.20	1.30	1.25	1.35
32-36 Gas Oil	.03⅛	.03¼	.03⅛	.03¼	.03¼	.03½
36-38 Gas Oil	.03½	.03¾	.03½	.03¾	.03⅝	.03⅞
38-40 Straw distillate	.03⅝	.03⅞	.03⅝	.03⅞	.03¾	.04
NORTH LOUISIANA—						
20-22 Fuel Oil	.95	1.00	1.00	1.05	1.00	1.05
32-36 Gas Oil	.03¼	.03½	.03¼	.03½	.03¼	.03⅝
38-40 light Straw distillate	.03½	.03¾	.03½	.03¾	.03¾	.04
ARKANSAS—						
38-40 Distillate	.03½	.03¾	.03½	.03¾	.03¼	.03⅝
32-36 Gas Oil	.03⅜	.03⅝	.03⅜	.03⅝	.03⅜	.03⅝
22-26 Refinery Fuel Oil	1.00	1.05	1.00	1.05	1.00	1.05
GULF COAST (South Texas)—						
Gas Oil	.04¾	.05	.04¾	.05	.04½	.04¾
Fuel Oil	1.75	1.80	1.70	1.80	1.70	1.75
PENNSYLVANIA—						
30-34 Fuel Oil	.05½		.05½		.05½	
36-40 Fuel Oil	.06		.06		.06	

ROAD OILS

CHICAGO DIST. (Based on Group 3)—	March 18		March 11		March 4	
50-60 Asphaltic Content	1.30	1.40	1.30	1.40		
60-70 Asphaltic Content	1.40	1.50	1.40	1.50		
OKLAHOMA (Group 3)—						
40-50 Asphaltic Content	1.20	1.30	1.20	1.30	1.20	1.30
50-60 Asphaltic Content	1.30	1.40	1.30	1.40	1.30	1.40
60-70 Asphaltic Content	1.35	1.45	1.35	1.45	1.40	1.45

NEUTRAL OILS

OKLAHOMA (Group 3)—	March 18		March 11		March 4	
Pale Neutrals:						
70-80 vis., 2½ color, 20-25 cold test	.04	.04½	.04	.04½	.04	.04½
100 vis., 2 color, 20-25 cold test	.06	.06½	.06	.06½	.06	.06½
100 vis., 3 color, 20-25 cold test	.05½	.06	.05½	.06	.05½	.06
150 vis., 3 color, 20-25 cold test	.12½	.13	.12½	.13	.12½	.13
150 vis., 4 color, 20-25 cold test	.12	.12½	.12	.12½	.12	.12½
180 vis., 4 color, 23-28 cold test	.14¼	.14¾	.14¼	.14¾	.14¼	.14¾
180 vis., 3 color, 23-28 cold test	.15	.15½	.15	.15½	.15	.15½
200 vis., 3 color, 23-28 cold test	.16	.16½	.16	.16½	.16	.16½
200 vis., 4 color, 23-28 cold test	.15¼	.15¾	.15¼	.15¾	.15¼	.15¾
200 vis., 3 color, 25-30 cold test	.16	.16½	.16	.16½	.16	.16½
220 vis., 4 color, 25-30 cold test	.16¼	.16¾	.16¼	.16¾	.16¼	.16¾
240 vis., 3 color, 25-30 cold test	.18	.18½	.18	.18½	.18	.18½
240 vis., 4 color, 25-30 cold test	.17¼	.17¾	.17¼	.17¾	.17¼	.17¾
280 vis., 3 color, 25-30 cold test	.20	.21	.20	.21	.20	.21
280 vis., 4 color, 25-30 cold test	.19	.20	.19	.20	.19	.20
Red Neutrals:						
180 vis., 5 color, 23-28 cold test	.13½	.14	.13½	.14	.13½	.14
180 vis., 6 color, 23-28 cold test	.12¾	.13¼	.12¾	.13¼	.12¾	.13¼
200 vis., 5 color, 23-28 cold test	.14½	.15	.14½	.15	.14½	.15
200 vis., 6 color, 23-28 cold test	.13¼	.13½	.13¼	.13½	.13¼	.13½
220 vis., 5 color, 25-30 cold test	.15	.15½	.15	.15½	.15	.15½
220 vis., 6 color, 25-30 cold test	.14¾	.15¼	.14¾	.15¼	.14¾	.15¼
240 vis., 5 coor, 25-30 cold test	.16	.16½	.16	.16½	.16	.16½
240 vis., 6 color, 25-30 cold test	.15¾	.16	.15¾	.16	.15¾	.16
280 vis., 5 color, 25-30 cold test	.18	.18½	.18	.18½	.18	.18½
150-160 vis., S. R. green, 40-50 cold test	.09¼	.09¾	.08	.08½	.07½	.08
190-200 dark green, 40-50 cold test	.08	.08½	.07¼	.07½	.06¾	.06¾

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

600 filtered	.16¼	.16½	.16¼	.16½	.16¼	.16½
590-600 Bright Stock	.28	.29	.28	.29	.28	.29
600-610 Bright Stock	.32	.34	.32	.34	.32	.34
Waxes:						
124-126 White Crude Scale Wax	.04½	.04¾	.04	.04¼	.04	.04¼
PENNSYLVANIA—						
150, 3 color	.28½		.28½		.28½	
180, 3 color	.30		.30		.30	
200, 3 color	.33½		.33½		.33½	
220, 3 color	.35		.35		.35	
600, steam refined	.21¾		.20½		.20½	
635, steam refined	.24½		.23½		.23½	
650, steam refined	.26		.25		.25	
600, Pennsylvania flash	.29		.27		.27	
630, Pennsylvania flash	.32		.30		.30	
*550, E filtered	.22½		.22½		.22½	
*600, E filtered	.24½		.24½		.24½	
600, E filtered	.23		.23		.23	
600, D filtered	.31		.30		.30	
550, E filtered	.20		.20		.20	
550, D filtered	.22		.22		.22	
Pennsylvania Bright Stock	.40		.38½		.38½	
†122-124 White Crude Scale Wax	.05		.05		.04½	
*122-124 White Crude Scale Wax	.05¼		.05¼		.04⅝	

*At Warren, Penn. †At New York City.

GULF COAST (South Texas)—						
Lubricating Stocks:						
Zero Black	.07½	.08	.07½	.08	.07½	.08
No. 2 color, 100 vis., pale oil	.09½	.10½	.09½	.10½	.09½	.10½
No. 2 color, 150 vis., pale oil	.11½	.12½	.11½	.12½	.11½	.12½
No. 3 color, 200 vis., pale oil	.14	.15	.14	.15	.14	.15
No. 3 color, 300 vis., pale oil	.16½	.17½	.16½	.17½	.16½	.17½
No. 3½ color, 500 vis., pale oil	.18½	.20	.18½	.20	.18½	.19½
No. 3½ color, 750 vis., pale oil	.24½	.25½	.24½	.25½	.24½	.25½
No. 1½ color, 150 vis., filtered	.21	.23	.21	.23	.21	.23
No. 2 color, 200 vis., pale, filtered	.24	.25	.24	.25	.24	.25
No. 3 color, 300 vis., pale, filtered	.28	.29	.28	.29	.28	.29
No. 3½ color, 500 vis., pale, filtered	.32	.33	.32	.33	.32	.33
No. 3½ color, 750 vis., filtered	.38	.40	.38	.40	.38	.40
No. 5 to 6 color, 200 vis., red oil	.12½	.13½	.12½	.13½	.12½	.13½
No. 5 to 6 color, 300 vis., red oil	.14½	.15½	.14½	.15½	.14½	.15½
No. 5 to 6 color, 500 vis., red oil	.17	.18	.17	.18	.17	.17½
No. 5 to 6 color, 750 vis., red oil	.22	.23	.22	.23	.22	.23
No. 5 to 6 color, 1200 vis., red oil	.24½	.26	.24½	.26	.24½	.26

NEW YORK DOMESTIC MARKET

	March 18	March 11	March 4
Motor Gasoline:			
Greater New York, in steel barrels	.20	.20	.20
New York State outside Greater New York and New England, tank wagon	.20	.20	.20
New Jersey, tank wagon	.19½	.19½	.19½
Gasoline in bulk, delivered at N. Y.	.16½	.16½	.16
V. M. P. Naphtha, in steel barrels	.19	.19	.19
Kerosene:			
Greater New York, tank wagon	.15	.15	.15
New York State outside Greater New York and New England, tank wagon	.15	.15	.15
New Jersey tank wagon	.14	.14	.14
Lubricating Oil (Industrial) at refinery: Bayonne, N. J.:			
Cylinder, extra light filtered, in barrels	.40½	.40½	.40½
Cylinder, light filtered, in barrels	.36½	.36½	.36½
Cylinder, Bright Stock	.48	.48	.48
Cylinder, steam refined (600)	.26½	.26½	.26½
Black, in bulk	.13½	.13½	.13½
Bloomless, white, 30-31 gravity, 170 vis.	.47	.47	.47
Bloomless, 885 specific gravity	.14½	.14½	.14½
Red Paraffin:			
170 viscosity	.20	.20	.20
212 viscosity	.22	.22	.22
265 viscosity	.24	.24	.24
295 viscosity	.27	.27	.27
Paraffin, 903 specific gravity	.24½	.24½	.24½
*Fuel Oil:			
Bunker Oil, 14 plus, delivered in barges, bbl.	1.60	1.60	1.60
Diesel Oil, at refinery, gallon	.05	.05	.05
Furnace Oil, tank wagon, gallon	.10	.10	.10
Gas Oil, delivered in New York	.05¼	.05¼	.05¼
Wax, fully refined:			
120-122 a.m.p.	.04½	.04½	.04½
125-127 a.m.p.	.04¾	.04¾	.04¾
130-132 a.m.p.	.05	.05	.05
135-137 a.m.p.	.05½	.05½	.05½

*Lighterage, 6.5c a barrel extra.

NEW YORK EXPORT PRICES

	March 18	March 11	March 4
Motor Gasoline, in cases, gallon	.28.15	.27.4	.27.4
Motor Gasoline, U. S. Navy, spec. gallon	.14.25	.13.5	.13.5
Naphtha, 60° F., 59-61 spec. grav.	.16.0	.15.0	.15.0
Naphtha, 60° F., 63-66 spec. grav.	.18.0	.17.0	.17.0
Naphtha, 60° F., 66-68 spec. grav.	.19.5	.18.5	.18.5
Kerosene:			
Standard white, in bulk, gallon	.07	.07	.07
Standard white, in barrels, gallon	.14	.14	.14
Standard white, in cases, gallon	.17.15	.17.15	.17.15
Water white, in cases, gallon	.08	.08	.08
Water white, in barrels, gallon	.15	.15	.15
Water white, in cases, gallon	.18.5	.18.5	.18.5

CRUDE OIL PRICES

February 4.—Ohio Oil Co. advanced Lima, Indiana, Illinois, Princeton, Plymouth, Waterloo and Wooster crudes 20 cents. Midwest Refining Co. advanced Salt Creek crude 21 cents. Canadian crude advanced 20 cents.

February 5.—Standard Oil Co. of California advanced California crudes, all fields, from 15 to 39 cents. Ohio Oil Co. advanced Elk Basin, Grass Creek light, Big Muddy, Rock Creek, Mule Creek, Lance Creek, Osage and Sunburst crudes 25 cents. Cat Creek advanced 25 cents.

February 6.—Standard Oil Co. of Louisiana advanced all grades of North Louisiana and Arkansas crudes 20 cents except Bellevue, which was advanced 25 cents. Atlantic Oil Producing Co. advanced all grades of Stephens, Ark., crudes 20 cents.

February 13.—Corning crude advanced 15 cents.

March 8.—Prairie Oil & Gas Co. advanced Mid-Continent crudes 10 to 25 cents per barrel. Changes were met by other purchasing companies. Magnolia Petroleum Co. advanced 28 to 30.9 gravity grade 5 cents and 31 to 32.9 grade 15 cents, meeting Prairie prices on three higher grades, for same area. The same company advanced Corsicana light and Mexia crudes 15 cents. The Humble Oil & Refining Co. advanced Currie crude 25 cents. The Ohio Oil Co. advanced crudes of the Central West 15 cents. Imperial Oil, Ltd., advanced Canadian crudes 15 cents.

March 10.—Paragon Development Co. advanced Warren, Simpson, Cumberland and Monroe County, Kentucky crudes 15 cents. Joseph Seep Purchasing Agency advanced Corning crude 20 cents and advanced Cabell and both Somerset grades 15 cents; Ragland crude was advanced 10 cents. The Ohio Oil Co. and Midwest Refining Co. advanced Wyoming and Montana crudes 15 cents, except Sunburst, Montana, crude 10 cents.

March 11.—The Standard Oil Co. of Louisiana advanced the various grades of Caddo, Homer, Haynesville, El Dorado, Bull Bayou, De Soto and Crichton crudes 15 cents. The Indian Refining Co. advanced Western Kentucky light and heavy crudes 15 cents.

Arkansas and North Louisiana	
Caddo, 38° and above	$1.85
35° to 37.9°	1.75
32° to 34.9°	1.65
Below 32°	1.50
Homer, 35° and above	1.85
33° to 34.9°	1.75
31° to 32.9°	1.65
Below 31°	1.50
Haynesville, 33° and above	1.75
Below 33°	1.65
El Dorado, 33° and above	1.85
Below 33°	1.75
Bull Bayou, 38° and above	1.80
35° to 37.9°	1.65
32° to 34.9°	1.50
De Soto	1.85
Crichton	1.65
Bellevue	1.55
Smackover, 26° and above	1.35
25° to 25.9°	1.20
24° to 24.9°	1.10
Below 24°	1.00
*Stephens, Ark.:	
Below 23°	1.00
23° to 25.9°	1.20
26° to 27.9°	1.35
28° to 31°	1.40

*Posted by Atlantic Oil Producing Co.

Wyoming and Montana	
Rock Creek (Wyo.)	$1.70
Salt Creek	1.60
Big Muddy	1.50
Mule Creek	1.10
Grass Creek (light)	1.95
Elk Basin	1.95
Lance Creek	1.80
Osage	1.90
Cat Creek (Mont.)	1.95
Sunburst (Mont.)	1.05
Greybull and Torchlight	1.95
Hamilton Dome	1.55

Lander and Lost Soldier based on contracts covering entire production of fields.

Oklahoma, Kansas, North and Central Texas	
Prairie Oil & Gas Co. and other major purchasing companies except as noted below:	
Below 30°	$1.25
30° to 32.9°	1.45
33° to 35.9°	1.75
36° to 38.9°	2.00
39° and above	2.25
Magnolia Petroleum Co.:	
Below 28°	1.00
28° to 30.9°	1.20
31° to 32.9°	1.45
33° and above, same as Prairie.	
Corsicana Light	2.00
Corsicana Heavy	1.00
Mexia	2.00
Currie	2.25
Powell	2.60
Thrall	1.00
Gulf Coast	
Grade "A"	$1.65
Grade "B"	1.40
Luling and Laredo	1.00
Milam County	1.35
Rockdale-Minerva (Milam Co.)	1.60
Calliham (Live Oak-McMullen Co.)	1.00
California	
14° to 19.9°	$1.00
20° to 20.9°	1.01
21° to 21.9°	1.02
22° to 22.9°	1.03
23° to 23.9°	1.05
24° to 24.9°	1.07
25° to 25.9°	1.10
26° to 26.9°	1.13
27° to 27.9°	1.16
28° to 28.9°	1.19
29° to 29.9°	1.22
30° to 30.9°	1.25
31° to 31.9°	1.28
32° to 32.9°	1.31
33° to 33.9°	1.34
34° to 34.9°	1.37
35° gravity and above	1.40
Eastern States	
Penna Grade Oil in New York Transit Lines	$4.50
Bradford District Oil in National Transit Lines	4.50
Penna Grade Oil in National Transit Lines	4.00
Penna Grade Oil in Southwest Pa. Pipe Line Lines	4.00
Penna Grade Oil in Eureka Pipe Line Lines	4.00
Penna Grade Oil in Buckeye Pipe Line Lines	4.00
Cabell Grade Oil in Eureka Pipe Line Lines	2.20
Corning Grade Oil in Buckeye Pipe Line Lines	2.15
Somerset Medium Oil in Cumberland Pipe Line Lines	2.30
Somerset Light Oil in Cumberland Pipe Line Lines	2.50
Ragland Grade Oil in Cumberland Pipe Line Lines	1.10
Lima	2.23
Wooster	2.15
Illinois	2.07
Indiana	2.08
Princeton	2.07
Plymouth	1.45
Waterloo	1.55
†Oil Springs, Canada	2.75
†Petrolia, Canada	2.68
Western Kentucky (light), Indian Refining Co.)	2.30
Western Kentucky (heavy), Indian Refining Co.	2.10
Warren and Simpson Counties (Ky.) (Paragon Dev. Co.)	2.30
Cumberland and Monroe Counties, (Ky.), (Paragon Dev. Co.)	2.50

†Plus Government bounty of 52½c.

Mexican Crude	
*Tuxpanm (f.o.b. Mexican Ports)	$1.10
†Panuco (f.o.b. Mexican ports)	.85
Tuxpam (New York)	1.85
Panuco (New York)	1.50

*Plus 25.70c tax. †Plus 15.17c tax.

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THE TRUTH ABOUT OIL

When the Attorney General of the State of Georgia wrote to The Oil and Gas Journal asking for certain elementary facts about the oil business he called attention to the difficulty in obtaining this information which is largely responsible for popular misunderstanding of the industry.

Since then similar requests have been received from associations of oil men throughout the country anxious to give the public the facts about oil through paid newspaper advertisements or by the distribution of leaflets to consumers at the filling stations.

Even the representatives of the United States Department of Justice assigned to investigate the petroleum industry have repeatedly called at the office of The Oil and Gas Journal for information essential to an understanding of their task.

The widespread use by marketing companies and associations of reprints of such editorials from The Oil and Gas Journal as "Why Gasoline Is Going Up" and "What the Attack on Oil Means" has suggested a more extensive **statement of the fundamental facts** about the oil business which could be **used as a text book** in the preparation of advertising or of public addresses or for reference by witnesses in future investigations.

A large portion of this issue of The Oil and Gas Journal has therefore been devoted to this purpose.

The primary purpose kept constantly in mind has been to **answer candidly and straightforwardly the questions the public is most frequently and insistently asking about oil and gasoline.** Some of the information of this character will be familiar to practical oil men yet much of it, being outside their individual spheres of business, may be news to them and all of it will be found of interest because presented in a new way.

Many oil men themselves do not realize **the origin of the trouble outside the industry often caused, indeed, by those within it.** A better understanding of the business as a whole will avoid such dissensions and agitations.

The questions asked by the public go to the fundamentals of the industry. There is a simple and effective answer to each one of them **—the exact truth.**

The great difficulty has been that while oil men knew the truth as a whole, they were unable, because of their being concerned personally with one branch or another, as producers, refiners or marketers, to envision the entire industry. They had never come together for an analysis of their problems as a whole and **no effort has ever been made, until now, to assemble in one publication the basic facts of the business.**

Outsiders, like the Attorney General of Georgia, have asked simply how much gasoline is extracted from a barrel of oil and what is its cost. They have met with declarations that no man living can give a definite answer to what a barrel of oil should be worth because of the almost infinite variety of grades, depths and locations. The same reply has been made to inquiry about the cost of gasoline from a barrel of crude.

This is true, generally speaking, but **if the public is to get some idea of what it seeks to know,** it is certainly possible to make an approximation to the cost of a barrel of oil and of the gasoline obtained from it. It must be explained, of course, that this is merely one case subject to a multitude of variations, but it, at least, gives the consumer some conception of the actual costs and profits or losses in the business, **the point upon which agitation has been most persistent.**

At the same time it is but fair to inform the public of the nature and necessity of these variations, the hazards of finding and producing oil, the effect of flush production on prices of both crude and refined, on the credit of the industry and its ability to continue serving the world with the product of a raw material **over which it has no control.**

Another point on which popular agitation has centered is the **divergence in prices between one section of the country and another.** It has been assumed that this was due to manipulation when as a matter of fact it is **the very best evidence that there can be no manipulation. No industry or business controlled by any one interest would have permitted itself to have suffered the losses running into hundreds of millions which the oil business suffered last year.**

These are some of the facts brought out in this issue of The Oil and Gas Journal in language that the man outside the industry can understand. It is the hope that the facts so laboriously compiled will give the representatives of the industry something to work upon when the time comes to state their case to Congress.

The figures quoted, wherever possible, **have been taken from Government statistics,** the United States Bureau of Mines, the Geological Survey, the Department of Commerce, the Bureau of Labor and the reports of the Federal Trade Commission and the Senate Committee on Manufactures which took testimony officially at two investigations. **If any reader desires confirmation he may write to his Senator or Representative in Washington for the official publications of these Government departments.**

Governors and Attorneys General of States, members of the Legislatures and all other officials who from time to time enter the discussion of gasoline will find a mine of trustworthy information in this issue. Editors of newspapers can avoid the humiliation of making erroneous statements about a subject on which they are not fully informed by studying these facts now compiled for the first time within two covers. Part of this material has of course been published in various publications and in the official bulletins of the Government bureaus but never before has it been compressed in one publication.

The purpose has been to serve the industry and to inform the public a labor of service which, in its scope and value, will speak for itself.

The official Governmental publications used are as follows: United States Department of the Interior, Bureau of Mines, Refinery Statistics; United States Geological Survey; Crude Petroleum Statistics; United States Senate Committee on Manufactures, Inquiry Into Cost of Gasoline and Petroleum Products; United States Department of Labor, Bureau of Labor Statistics on Wholesale and Retail Prices; United States Department of Commerce Yearbook; Federal Trade Commission pamphlet on Methods of Cost, April 7, 1921.

HASH
or
Pump Potpourri

Several months ago, when strong competition began to be felt in refining circles, we received an S. O. S. call from a young fellow who had inherited a refinery and some money besides.

He knew refining processes and markets and power costs—that is, he knew his power was costing him altogether too much. He told us that his fuel costs per gallon of refined product wouldn't stand comparison at all with those of his competitors, and knowing of our interest in such matters he asked us to check over his pumps.

We did. And it was the worst mess we ever saw—it resembled mechanical hash, or pump potpourri.

They had spent much good money for pumps, and the only redeeming feature about the whole installation was that they had many good pumps, but it was evident that little attention had been paid in selecting the proper type or the proper size pump for any job. The young fellow admitted that his Father had felt well towards a certain type of pump and always managed to have a couple in stock so that all pump requirements could be filled promptly.

The result was in some places 6x4x6" pumps were lazily doing the work of 3x2x3s, and in other places 6x4x6s were running wild trying to maintain the capacity of 7½x5x10s. All this meant high steam consumption.

The solution was merely a matter of a little intelligent switching, and the furnishing of two small new TRANSIT PUMPS—a very insignificant investment compared to what the saving in fuel figured.

The young fellow is feeling better for he is making money now—a little more than his Father averaged—he told us confidentially.

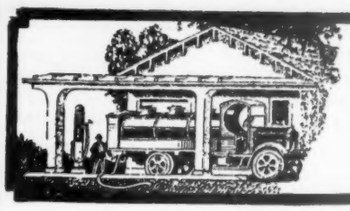
So the old order of things changeth.

He often remarks about the friendliness of TRANSIT Engineers and wonders why other men with problems similar to his own do not avail themselves of TRANSIT engineering service.

Hence, this story—perhaps we can help you.

NATIONAL TRANSIT
Pump & Machine Company
Oil City, Pa.

District Offices: New York Philadelphia Pittsburgh Cleveland Tulsa Houston Denver



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States, as furnished by the larger marketing concerns, March 18

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

Main Service Station Price

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Chicago district	18.0	..	20.0	12.0
1 to 100 gallons				18.0
101 to 249 gallons				16.0
250 to 499 gallons				15.5
500 gallons or more				15.25

Tank wagon prices on April 10, 1922, g. up 1½c; May 8, g. up 1c; k. down 1c; Oct. up 1c; July 19, g. down 2c; k. down 1c; Oct. 10, g. down 2c; Oct. 31, g. down 1c; Feb. 5, 1923, g. up 1c; Feb. 20, g. up 1c; Aug. 14, g. down 6.6c; Oct. 4, k. down 1½c; Nov. 10, g. down 1.4c; Dec. 29, g. up 2c; Jan. 12, 1924, g. up 2c; k. up 1c; Feb. 5, g. up 2c, k. 1c.

Decatur, Ill.	18.2	..	20.2	12.5
East St. Louis	17.1	..	19.35	11.6
Joliet	18.4	..	20.4	12.7
Peoria	18.2	..	20.2	12.5
Quincy	18.2	..	20.2	12.3
Davenport, Ia.	18.5	..	20.5	12.9
Des Moines	18.5	..	20.5	12.9
Keokuk	18.5	..	20.5	12.9
Sioux City	18.0	..	20.0	12.5
Duluth, Minn.	19.2	..	21.2	13.6
Minneapolis	18.9	..	20.9	13.6
La Crosse, Wis.	19.2	..	21.2	13.4
Milwaukee	18.1	..	20.1	12.2
Madison	18.3	..	20.3	12.5
Detroit, Mich.	18.8	..	20.8	13.2
Grand Rapids	18.7	..	20.7	13.1
Saginaw	18.9	..	20.9	13.3
Evansville, Ind.	20.0	2.0	22.0	12.5
Fort Wayne	20.4	2.0	22.4	12.9
Indianapolis	20.2	2.0	22.2	12.7
South Bend	20.4	2.0	22.4	12.9
Fargo, N. D.	20.6	1.0	22.6	15.6
Huron, S. D.	22.0	2.0	24.0	14.1
Sioux Falls	21.5	2.0	23.5	13.6
*Kansas City	18.9	1.0	20.9	11.3
Springfield	17.8	..	19.8	12.2
*St. Louis	17.6	.5	19.9	12.0
*St. Joseph	18.3	.5	20.3	12.2
Wichita, Kans.	17.8	..	19.8	11.8
Bartlesville, Okla.	17.9	1.0	19.9	10.9

*City tax.

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
*Pittsburgh, Pa.	20.0	..	25.0	14.0
*Philadelphia	20.0	..	25.0	14.0
*Scranton	20.0	..	25.0	14.0
*Allentown	20.0	..	25.0	14.0
*Altoona	20.0	..	25.0	14.0
Dover, Del	22.0	2.0	25.0	14.0
Wilmington	22.0	2.0	25.0	14.0
Providence, R. I	20.0	..	23.0	14.0
Springfield, Mass	20.0	..	23.0	14.0
Worcester	20.0	..	23.0	14.0
Boston	20.0	..	23.0	14.0
Hartford, Conn.	21.0	1.0	24.0	14.0
New Haven	21.0	1.0	24.0	14.0

*Pennsylvania tax of 2 cents is collected by the dealer and paid by him direct to the State.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Atlanta, Ga.	22.0	3.0	26.0	14.0
Augusta	24.0	3.0	26.0	14.5
Macon	24.0	3.0	26.0	15.5
Savannah	22.0	3.0	24.0	14.0
Birmingham, Ala.	22.0	2.0	24.0	15.5
Mobile	21.0	2.0	23.0	13.5
*Montgomery	23.0	3.0	26.0	16.5
Clarksdale, Miss	20.0	1.0	22.0	14.0
Jackson	20.0	1.0	22.0	12.0
Natchez	19.5	1.0	21.5	13.5
Vicksburg	19.5	1.0	21.5	13.5
Jacksonville, Fla	22.0	3.0	24.0	14.0
Miami	24.0	3.0	26.0	15.5
Pensacola	22.0	3.0	24.0	14.5
Tampa	22.0	3.0	24.0	14.0
Covington, Ky.	21.0	1.0	23.0	15.0
Lexington	21.0	1.0	23.0	15.0
Louisville	20.0	1.0	22.0	14.0

*In addition to State tax of 2 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and ⅛ cent on kerosene.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Dallas, Tex.	17.0	1.0	21.0	10.0
Fort Worth	17.0	1.0	21.0	11.0
Houston	17.0	1.0	21.0	12.0
San Antonio	15.0	1.0	18.0	10.0
El Paso	17.0	1.0	20.0	13.0
Muskogee, Okla.	20.5	2.5	23.5	13.0
Oklahoma City	19.5	2.5	23.5	12.0
Tulsa	20.5	2.5	23.5	11.0
Ft. Smith, Ark.	20.0	4.0	24.0	13.0
Little Rock	22.0	4.0	26.0	13.0
Texarkana	21.9	4.0	24.0	13.0

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Albany, N. Y.	20.0	..	22.0	14.0
*New York	20.0	..	22.5	15.0
Buffalo	18.5	..	21.5	15.0
Rochester	19.5	..	21.5	13.0
Syracuse	19.5	..	21.5	15.0
Boston, Mass.	20.0	..	22.5	15.0
Providence, R. I	20.0	..	23.5	15.0
Augusta, Me.	20.0	1.0	23.5	15.0
Manchester	20.0	1.0	23.5	15.0
Burlington, Vt.	20.0	1.0	23.5	15.0

*Price in steel barrels.

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Newark, N. J.	19.5	..	....	14.0
Atlantic City	19.5	..	....	14.0
Annapolis, Md.	21.0	2.0	23.0	14.0
Baltimore	21.0	2.0	23.0	13.0
Cumberland	21.0	2.0	24.0	13.5
Washington, D. C.	19.0	..	23.0	13.5
Norfolk, Va.	22.0	3.0	24.0	14.0
Petersburg	22.0	3.0	24.0	14.5
Danville	22.0	3.0	24.0	14.5
Richmond	22.0	3.0	24.0	14.5
Roanoke	22.0	3.0	24.0	14.5
Keyser, W. Va.	21.0	3.0	....	14.5
Charleston	21.0	3.0	....	14.5
Parkersburg	21.0	3.0	....	13.0
Wheeling	21.0	3.0	....	14.5
Charlotte, N. C.	22.0	3.0	....	14.5
Hickory	22.0	3.0	....	14.5
Mt. Airy	22.0	3.0	....	14.5
Salisbury	22.0	3.0	....	14.5
Charleston, S. C.	22.0	3.0	....	13.5
Columbia	22.0	3.0	24.0	14.5

PACIFIC COAST DISTRICT

Standard Oil Co. (California)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
San Francisco	17.0	2.0	20.0	15.5
Los Angeles	16.0	3.0	19.0	15.5
Fresno	17.5	3.0	20.5	17.5
Reno, Nev.	20.5	3.0	23.5	19.0
Portland, Ore.	19.0	3.0	22.0	16.5
Seattle, Wash.	18.0	3.0	19.0	16.5
Tacoma	18.0	3.0	21.0	16.5
Spokane	22.0	3.0	25.0	20.5
Phoenix, Ariz.	23.0	3.0	26.0	21.5

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Omaha	19.25	..	20.25	12.5
Crawford	19.0	..	....	12.25
McCook	19.75	..	21.75	14.0
Norfolk	18.75	..	20.75	12.0
North Platte	19.75	..	21.75	13.75
Scotts Bluff	19.25	..	21.25	13.25

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
Denver, Colo.	21.0	2.0	23.0	14.5
Glenwood Spgs.	25.0	..	....	16.5
Pueblo	21.0	..	....	14.5
Billings, Mont.	23.5	2.0	25.5	16.5
Butte	25.0	2.0	27.0	17.0
Great Falls	25.0	2.0	27.0	18.9
Helena	25.0	2.0	27.0	18.0
Miles City	24.5	2.0	26.5	17.5
Boise, Idaho	24.5	2.0	26.5	20.0
Salt Lake, Utah	24.0	2.5	26.0	17.5
Ogden	24.0	2.5	26.0	17.5
Basin, Wyo.	22.0	1.0	....	15.0
Casper	20.0	1.0	22.0	13.0
Cheyenne	21.5	1.0	23.5	15.0
Cody	23.0	1.0	....	16.0
Lander	23.0	1.0	26.0	15.0
Albuquerque, N. M.	24.0	1.0	26.0	17.5

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
New Orleans, La	17.5	1.0	20.5	9.0
Alexandria	18.5	1.0	21.5	13.0
Baton Rouge	17.0	1.0	20.0	11.5
Lake Charles	18.5	1.0	21.5	13.0
Shreveport	18.5	1.0	21.5	13.0
Memphis, Tenn.	20.0	2.0	22.0	14.0
Chattanooga	20.5	2.0	22.5	14.5
Knoxville	21.5	2.0	23.5	15.0
Nashville	19.5	2.0	20.5	13.5
Bristol	22.0	2.0	24.0	15.5
Little Rock, Ark	21.0	4.0	23.0	13.0

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Incids tax of	Service station	Tank wagon
All Ohio points.	20.0	..	22.0	15.0

TANK WAGON CHANGES

March 11.—Magnolia Petroleum Co. advanced gasoline tank wagon and service station prices 1 cent at El Paso, Texas.

March 14.—Magnolia Petroleum Co. reduced gasoline tank wagon 2 cents and service station 1 cent at Fort Smith, Ark.

"SHUTTING OFF" AN OIL WELL

In times of overproduction of oil the individual oil operator cannot so easily tell his driller to turn off the oil. It can be done but whether he gets his well back again is a question.

NORTH TEXAS MARKET MOVEMENT VERY SLOW

FORT WORTH, Tex., March 18.—With the greater part of the Eastern consuming territory still in the grip of winter and bad weather conditions locally in Texas, movement of practically all petroleum products for North Texas is extremely slow. There is some inclination on the part of a few of the refineries in North Texas to allow their stocks of New Navy gasoline to accumulate rather than to make any concessions from the present prices in order to secure shipping instructions, and as a result notwithstanding the scarcity of orders, there has been little, if any, change in prices over last week. New Navy Gasoline being generally quoted at 10¾ cents to 11 cents.

Prices on 64-66 gasoline remain unchanged, quotations ranging from 13 to 13¼ cents. With practically all of the recent export orders taken care of and the rather poor domestic demand, stocks of these grades show some increase.

Kerosene continues to register a further weakness, prices receeding to 4½ to 4¾ cents, with practically no movement, although stocks are not large due to the comparatively small amount of this material being manufactured in North Texas.

Natural gasoline, like the straight run products, is suffering from a scarcity of orders and price concessions have been in order during the past week. Grade A being quoted at 9½ to 9¾ cents, Grade B 8½ to 8¾ cents, Grade C 7½ to 7¾ cents.

Gas oil prices show a small decline, 32-36 being quoted at 3 to 3¼ cents and 38-40 at 3½ cents.

The fuel oil situation in North Texas remains unchanged due to the continued demand for this product on the part of the drillers in the North Texas Field, prices range from $1.15 to $1.30 per barrel with very little movement outside of local demand.

THE PURCHASING AND PIPE LINE COMPANIES

The producer runs his oil from the well to his settling tanks—these tanks are located on the lease and usually have a capacity of from 250 to 500 bbls.—and the purchasing company then buys the oil at the posted price. The oil is sent to the pipe line company as part of the purchasing company's tender of shipment to its customers. In most cases the pipe line company has nothing to do with the purchase of the oil, and is only responsible for it while carrying it and delivering it to its destination.

MID-CONTINENT REFINERY OPERATIONS, MARCH 8

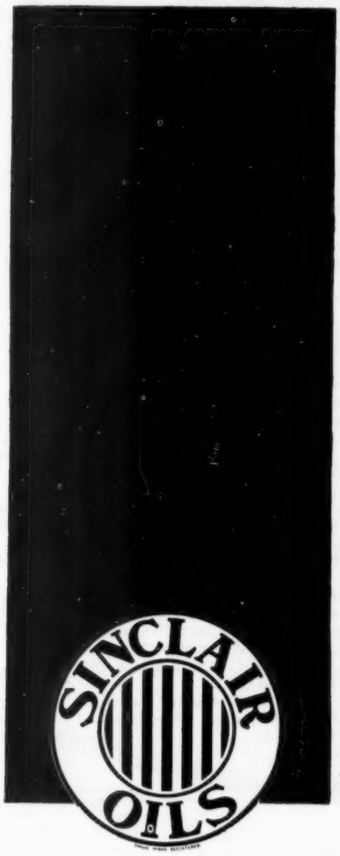
An increase of 4,005 bbls. in oil run to stills was reported by the Western Petroleum Refiners' Association in the weekly bulletin, for March 8. During the week the amount of crude run to stills showed a decrease from 1,847,481 bbls. to 1,790,996 bbls., a decline of 56,485 bbls. An increase of 60,490 bbls. in the amount of rerun oils charged to stills offset this decline and gave the increase noted, amounting to .18 per cent. The output of gasoline dropped from 26,292,498 gallons to 25,275,934 gallons, a decrease of 1,016,564 gallons, or a decrease of 3.87 per cent. The output of kerosene dropped from 7,627,939 gallons to 6,898,741 gallons, a decline of 729,198 gallons, or 9.56 per cent. At the same time the output of gas and fuel oils climbed from 38,131,248 gallons to 38,464,366 gallons, an increase of 333,118 gallons, or .87 per cent. During the week gasoline shipments increased 4.34 per cent and kerosene shipments advanced 16.53 per cent. Stocks of gasoline, however, increased 7,330,085 gallons, or 4.78 per cent; kerosene stocks decreased 515,711 gallons, or 2.11 per cent, and gas and fuel oil stocks declined 7,66,479 gallons, or 6.03 per cent.

CONSOLIDATED STATEMENT COVERING ALL REPORTING REFINERIES FOR THE WEEK ENDING 7 A. M., MARCH 8, 1924

	Kansas	Oklahoma	Texas	Louisiana-Arkansas	Total	Mar. 1, '24	Feb. 9, '24	Jan. 12, '24
Number of refineries reporting	24	61	42	12	139	138	138	134
Daily capacity of stills (bbls.)	83,900	268,700	136,650	46,200	535,450	533,950	533,450	531,750
Combined operations during week:								
Materials to stills (bbls.):								
Crude, item A	240,913	908,617	558,105	83,361	1,790,996	1,847,481	1,695,928	1,765,153
Other oils (see note), item B	29,167	171,434	170,167	27,527	398,295	337,805	355,224	393,104
Total	270,080	1,080,051	728,272	110,888	2,189,291	2,185,286	2,051,152	2,158,259
Output of finished products (gals.):								
Gasoline, item C	3,263,861	15,497,324	5,590,147	924,602	25,275,934	26,292,498	25,165,894	25,129,093
Kerosene, item D	1,104,115	3,608,759	1,901,902	283,965	6,898,741	7,627,939	7,272,509	6,710,173
Gas and fuel oil, item E	4,997,160	17,111,684	14,305,523	2,049,999	38,464,366	38,131,248	34,062,167	40,126,633
Stocks on hand at close of week:								
Materials for stills (bbls.):								
Crude, item J	794,674	4,312,567	1,143,596	975,628	7,226,465	5,013,139	7,072,984	6,784,554
Other oils (see note), item K	39,967	1,200,250	400,428	619,727	2,250,372	2,238,103	2,077,299	2,273,413
Finished products (gals.):								
Gasoline, item L	14,282,551	91,989,098	48,460,744	5,922,920	160,655,313	153,325,228	126,800,850	117,254,476
Kerosene, item M	1,416,739	10,789,499	10,581,114	1,122,792	23,910,144	24,425,855	20,720,003	18,605,363
Gas and fuel oil, item N	6,882,184	52,232,961	44,370,493	15,903,276	119,388,907	127,055,386	117,093,207	115,223,653

Note: Other oils includes all oils other than crude which are either purchased or withdrawn from stocks and run to stills during the week. The total of items A and B is, therefore, the net quantity of materials consumed by the reporting refineries in producing the quantities of products shown as the result of the operation of the refineries during the week. Item K includes all stocks of oil, other than crude, held for further refining.

SINCLAIR OILS



THE convenient location of Sinclair refineries and warehouses—the ready reserve stock of Sinclair Oils—Sinclair's tank trucks and tank cars—tankers of our affiliated companies—these facilities for prompt deliveries give our customers a feeling of satisfaction and security in placing their orders for Sinclair Oils.

"From a Can to a Cargo"

SINCLAIR REFINING COMPANY

New York: Sinclair Oil Building, 45 Nassau Street Chicago: 111 West Washington Street

Cable Adress "Lucent"

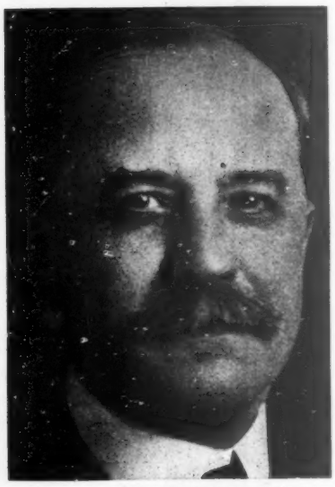
Oil Men to Hear Problems Discussed

Program Completed for Annual Meeting of the American Oil Men's Association At Chicago Next Week. Prominent Speakers Invited

By J. B. Waldo

CHICAGO, March 17.—Prominent speakers will adorn a well rounded program at the annual convention of the American Oil Men's Association, which is to be held at the Congress Hotel here for three days, March 25, 26, and 27. The program as finally completed was made public today by John D. Reynolds, secretary of the association.

The opening session on Tuesday is to be addressed by United States Senator



LAFE S. COLLINS
President, S. L. Collins Oil Co.

Medill McCormick of Illinois, who has promised to be present unless vital developments in the situation at Washington should prevent. Senator McCormick is

E. W. MARLAND
President, Marland Refining Co.

expected to discuss the developments growing out of the Washington investigation of naval reserve leases.

Robert E. Crowe, States attorney for Cook County, Illinois, is to discuss "Law Enforcement," and to welcome the visiting oil men. One of the prominent features of the first day's session will be an address by Lafe S. Collins, president of the S. L. Collins Oil Co., who recently made a decided hit before the meeting of the Iowa independent oil men. He will talk on "What Constitutes a Profit." The session will begin at 12:30 p. m., after luncheon in the Gold Room at the Congress Hotel.

Business Sessions

On Wednesday the first business session of the association will be held in the Florentine room, during which it is expected that the recently developed situation which affects the entire oil industry will be taken up for discussion. The afternoon session will begin with a luncheon at 12:30 in the Gold room, during which an address will be delivered by William P. Green of the Associated Advertising Clubs of the World. Mr. Green has the reputation of being an able speaker, and he will discuss "What is the Oil Industry's Greatest Asset?"

John W. Ogram, a prominent attorney of Chicago, will address the convention on "The Necessity of Cooperation in Business." The day's activities will be rounded out with a stag party at the Congress.

Thursday morning will be devoted to a membership and board of directors' meeting, at which time the election of officers will take place, while in the afternoon, with A. J. Callaghan presiding, the new president will deliver his initial address. Other addresses of the session will be delivered by F. A. Pielsticker, president of the Western Petroleum Refiners Association on "The Refiner in 1924," and H. H. Ragle, president of the Michigan Independent Oil Men's Association, who is expected to "tear off the lid" with an address on "What Are We Doing to Defend Our Business?"

Two notable addresses are expected in the evening at the annual banquet, which will close the convention. E. E. Grant, prominently known in the oil trades, is to be toastmaster, and the addresses are to be delivered by E. W. Marland, president of the Marland Refining Co., and Edward S. Jordan, president of the Jordan Motor Car Co. Dancing will close the evening.

The arrangements committee has not overlooked the ladies who are to be present during the convention. On Tuesday they are to be special guests at a luncheon at noon, and an informal dinner-dance at the Congress in the evening.

(Continued on Page 156)

H. H. RAGLE
President, Michigan Independent Oil Men's Association

PROGRAM FOR ANNUAL MEETING OF AMERICAN OIL MEN'S ASSOCIATION

	Tuesday, March 25
10:00 a. m.	Registration—Elizabethan room.
12:30 p. m.	Luncheon—Gold room.
	Address—Medill McCormick, United States Senator from Illinois.
	Address—Robert E. Crowe, States Attorney of Cook County, Illinois, "Law Enforcement."
	Address—Lafe S. Collins, president S. L. Collins Oil Co., "What Contsitutes a Profit?"
	Wednesday, March 26
10:30 a. m.	Business session—Florentine room.
12:30	Luncheon—Gold room.
	Address William P. Green, Associated Advertising Clubs of the World, "What Is the Oil Industry's Greatest Asset?"
	Address—Charles W. Whitehair—Whitehair Brothers Co., "The Hazard From a Liability Standpoint Associated With Gasoline Distribution."
	Address—John W. Ogram, Chicago attorney, "The Necessity of Cooperation in Business."
Evening	Stag.
	Thursday, March 27
10:30 a. m.	Membership and Board of Directors meeting. Election of officers.
12:30 p. m.	Luncheon—Gold room—A. J. Callaghan presiding.
	Address—New president.
	Address—F. A. Pielsticker, president Western Petroleum Refiners Association, "The Refiner in 1924."
	Address—H. H. Ragle, president Michigan Independent Oil Men's Association, "What Are We Doing to Defend Our Business?"
Evening	Annual banquet—E. E. Grant, toastmaster.
	Address—E. W. Marland, president Marland Refining Co.
	Address—Edward S. Jordan, president Jordan Motor Car Co.
	Dancing.
	PROGRAM FOR LADIES ENTERTAINMENT
	Tuesday, March 25
	Registration—English room.
12:30 p. m.	Luncheon—Congress Hotel.
Evening	Informal Dinner-Dance—Congress Hotel.
	Wednesday, March 26
Noon	Luncheon and entertainment—South Shore Country Club.
Evening	Theater party.
	Thursday, March 27
Noon	Luncheon—Bridge, Five Hundred and Mah Jongg—Chicago Yacht Club.
Evening	Banquet.

NUMBER OF WELLS NEEDED FOR OIL SUPPLY

(Continued from Page 21)

October									
November									
December									
January, 1923									
February									
March									
April									
May	1,998,012	283,507	7						
June	1,992,662	105,930	19	2,106,163	284,630	7			
July	1,999,749	45,672	44	2,100,208	101,434	21	2,209,139	284,545	8
August	1,999,566	47,720	42	2,092,541	106,908	20	2,199,831	285,308	8
September	2,005,716	43,489	46	2,101,702	74,566	28	2,231,547	285,301	8
October	2,004,341	38,010	52	2,104,164	57,660	36	2,275,604	285,259	8
November	2,014,593	54,839	37	2,083,525	107,117	19	2,195,235	287,117	
December									
January, 1924									

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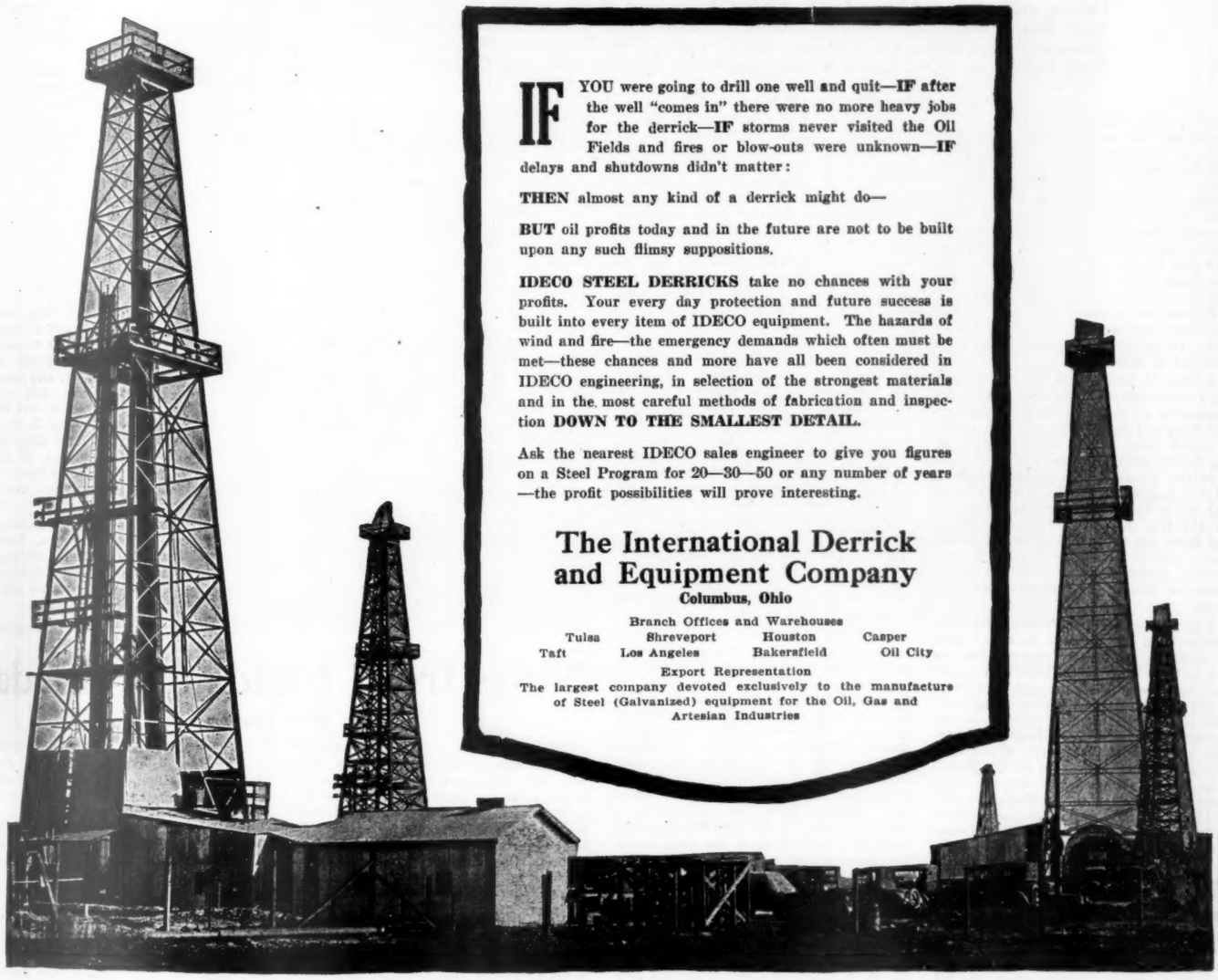

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INTERNATIONAL STEEL DERRICKS (GALVANIZED)

Fields of the Central West

By Whit

Deeper drilling in old Lima Field. Ohio Oil Co. gets 70-bbl. well in Bloom Township, Wood County. Arnold, Bell & Hannawall find 40-bbl. producer in Ottawa County. Masters & Colt have 90-bbl. well in Pike Township, Hotmire Pool, Indiana, and Carl Glover 60-bbl. completion. Gas find in Hardin County.

FINDLAY, Ohio, March 17.—Drilling operations are moving at a very slow pace in the fields of the Central West and few completions are recorded for the week from the Trenton Rock fields of northwestern Ohio, or the shallow and deep Clinton sand fields of central Ohio. Eastern Kentucky reported but one completion and Illinois none for several days. The only important finds were located in the Lima Field of Ohio and the Princeton and Portland fields of Indiana.

Unless the weather improves March will show but slightly better than February. It is almost impossible to move material in most fields.

In the old Lima Field of northwestern Ohio prospects are faltering for a rejuvenation of the well known sand, but the wells will be drilled to a much greater depth than in the earlier stages of the development 35 years ago. In those days the Trenton was penetrated from 20 feet to 100 feet in the sand while today oil is being found at depths as far as 450 feet in. In finding this deeper pay there are at least four pay showings above, any of which would make a commercial producer where there is power plants to handle them along with other wells.

Just now it looks as though considerable natural gas is to be found at least in spots in advance to the old field to the south. One is in Hardin County, near the towns of Roundhead, McGuffey, Foraker, Silver Creek, Yelverton, Ridgeway and across the line south near the Lewistown reservoir, in Logan County. The other is in the extreme southern part of Mercer County, in Butler Township, where last week two nice gas wells were reported. In the McGuffey section of Hardin County, unknown parties have drilled in a well on the Shadley sisters farm, that is reported at 500,000 feet, and another on the Earl Scott farm, equally good, so McGuffey now has what it terms 1,000,000 feet of gas a day for use.

The big 400-bbl. well drilled and reported last week by the Sun Oil Co., on the S. A. Barhoff farm, Section 15, Eden Township, Seneca County, where the big pay was found at 285 feet in the Trenton has caused considerable excitement and leasers have been going over the nearby territory in hopes of picking up a few leases. The territory is of the crevice order and a crevice must be encountered to get a producer. It has been tried by other operators without success, but the Sun Oil Co. has been very fortunate in getting big wells in that immediate territory, and has drilled in at least a dozen or more crevice wells, all above the 100-bbl. mark, and they hold their production better than in the more shallow sands of the Lima Field. Twenty years ago the field was producing considerable oil around Tiffin, and every well owner would then remark how well the producers held up and that it was easy figuring today what their production would be for many days.

The best completion in the old Lima Field for the week was made by the Ohio Oil Co., in its No. 20 on the J. A. Meyer, Section 6, Bloom Township, Wood County, just north of the well known oil town of Cygnet. This well is 600 feet from the north line and the same distance from the west line of the farm, which brings it close to the Findlay highway. The sand in that particular area is reached at a depth around 1,050 feet and this well was sent to a total depth of 1,498 feet, with a production of 70 bbls. This lease adjoins the lease of the Western Ohio Oil Co., on the Loose farm, known as the old Cygnet ball ground, upon which two nice wells deep down in the Trenton wells were completed last summer. The Ohio Oil Co. also drilled to the southeast of Cygnet, No. 28 on the William Bishop farm, Section 21, in the southwest corner of the 160 acres, with a production of 20 bbls. from a depth of 1,357 feet. Both wells are located on what is known as the "Hogs-Back" or "Sucker-Rod-Belt" that runs through from east of Findlay in Hancock County, bearing a little to the west and through the entire length of Wood County to Monclova, in Lucas County. Production found along this belt in the early days were of the gusher order. In spots the belt is narrow, especially to the north end in Lucas County, but in Wood and parts of Hancock counties it is from a mile to several miles in width.

In Plain Township, Wood County, southwest of Bowling Green, the Paragon Refining Co. has drilled in No. 24 on the Pinert-Munn farm, Section 26 and get a heavy dose of salt water at a depth of 1,750 feet, also a nice showing of oil above the water and it is expected to make a commercial well when the water is exhausted. In Lake Township, same county and south of Toledo, C. F. Zeising and others drilled in a test on the Bingham Brothers farm, in the northwest quarter of Section 30, 200 feet from the north line and 800 from the west line of the lease, which was a duster at 1,309 feet.

In Douchouquet Township, Auglaize County, the Vossler Oil Co.'s No. 4 on the C. Vossler, Section 16, pumped but 2 bbls.

In Jackson Township, Sandusky County, B. J. Rinebold's No. 3 on his own farm, Section 30, pumped 5 bbls. Top of sand found at 1,250 feet and drilled 50 feet in.

North of Genoa, in Allen Township, Ottawa County, Arnold, Bell & Hannawall found a well above the average in No. 2 on the Amelia Shessler, Section 17, which showed 40 bbls. at 1,380 feet. Near Elmore, in Harris Township, same County, Sherman, Richards & Neiman, known as the Three Way Oil Co., drilled in No. 5 on the H. W. Nieman, Section 18, for a 20-bbl. pumper at 1,330 feet, and one of the best wells found in that part of the field for some time.

Indiana Field

The Hotmire Pool along the line of Jay and Randolph counties, and some dozen or so miles from Portland, Ind., came to the front during the week with some nice producers, indicating that much work will be done in that area along the Mississinewa River during the summer. The main Hotmire Pool is in Pike Township, Jay County and acreage is largely picked up for miles in any untested direction of the main pool. Several large companies and individual operators are looking over the field, such as the Wiser Oil Co., W. E. Rice, of Connellsville, Pa., L. E. Howard, of Chicago, with large operating plans in mind. At least 30,000 acres in all but one direction from the Hotmire Pool has never had a test on it. The Trenton Rock in Indiana being a pooly sand producer, several other pools may be found. It is one place where $2,000 will test a block of leases to a million dollar value, such being the value of the Hotmire Pool, which now has close to 100 wells paid for by their own oil, and money ahead despite the cheap price of the past two years. There are double the natural pumping wells in the pool there are of dry holes, figuring the dusters drilled on outer edges of production in some directions. Several drilling strings are now running.

In Pike Township, in the Hotmire Pool, Masters & Colt's Nos. 14 and 15 A. Ritenour, Section 34, pumped 20 and 90 bbls. Carl Glover and others' No. 2 on lands of the Bank of Red Key, produced 60 bbls. Omar Oil & Gas Co.'s No. 6 J. E. Mock, Section 35, pumped 8 bbls. N. E. Masters' No. 1 Oleason, and the Morse Oil & Gas Co.'s No. 1 Helphe are both dry holes.

In the Princeton Field, in Center Township, Gibson County, in southwestern Indiana, Mann, Huber & Tichenor's No. 5 on the southwest corner of the M. Hollingsworth farm, Section 24, was dry at 1,500 feet.

No completions were reported from across the State line in Illinois.

Central Ohio

Only one completion is reported from the Central Ohio Field, and that is Blackwood, Heiber and others' No. 3 on the northeast corner of the Dave Geisenger farm, in Lot 10, Tract 9, of Chatham Township, Medina County, which was dry at 396 feet.

According to reports a considerable amount of drilling is being planned for the southern portion of Ohio between Cincinnati and Gallipolis. Along the north bank of the Ohio River shale beds exist and it is evident the oil found in these beds comes from below, which makes it almost a certainty production of either product is bound to be encountered. The most likely formation in the southwestern part of the State to find production will be the Clinton sand which should be struck at comparatively shallow depth, to say nothing of a stray sand known to exist above the Clinton. During the middle '90's a well was drilled near the railroad town of Peebles, in the northern part of Adams County, by Fostoria parties, who reported it showing for a 3-bbl. pumper, and since then no further tests have been announced. Gas, some years ago, was reported found at around 900 feet in Clinton County and in the Clinton line, the source of the deep production in the Central Ohio Field. Clinton County is between Columbus and Cincinnati, southeast from Dayton.

Last fall there were leasing activities in Pike, Scioto, Adams, Brown, Highland, Clermont, Ross, Fayette, Madison, and in many counties between Lima and Cincinnati and the summer should see a

(Continued on Page 139)

News from Fields of Canada

By Victor Lauriston

CHATHAM, Ont., March 15.—In the Ontario fields, some important new deep tests are understood to be contemplated by an American syndicate represented by J. Richard Albert. These interests are doing considerable leasing in territory in Kent County previously untested by deep drilling. One area which may be tested is close to Wallaceburg, in the northwestern part of Kent County, and almost due north of the Dover deep field. It is reported the syndicate has also secured acreage a few miles east of Chatham on the north side of the River Thames, between Louisville and Kent Bridge. This area has already been tested in the cornniferous limestones, but no deep drilling has ever been undertaken. In the cornniferous formation, some showings of oil were found near Northwood, on the south side of the Thames.

In the Tilbury-Romney deep field, the Glenwood Natural Gas Co. deep producer on the Shanks farm, west of Port Alma, which was reported to be showing about 20 bbls. a day when pumped at 1,500 feet, is being tested with the tubing at 3,000 feet. Definite results of this latest test have not been made known; but the well does not seem to be much Letter than a small pumper. East of Port Alma, the Union Natural Gas Co. No. 248 on the Truckenbrod farm is drilling at about 3,050 feet, or 217 feet in the Trenton limestone. The drill has been working in an exceedingly hard formation, making progress very slow, though better progress has been made the last few days. To the northwest, Union Natural Gas Co. No. 249, Mancell farm, Tilbury East, is drilling at 2,450 feet. This test got the Trenton limestone at 2,754 feet, so that it is now 696 feet in that formation. Neither oil nor gas has been encountered in the Trenton in either of these deep tests.

Two miles south of Tilbury, the Eugene Coste & Co. No. 5 deep test on the Malcott farm, Tilbury East Township, is drilling at 1,500 feet.

In southern Alberta, the Sarnia Oil & Gas., which is undertaking carbon black development in the Many Island Lake area, northeast of Medicine Hat, is also arranging to handle any gas production that may be developed on the 12,000 acres of leases held by the Candian Oil & Refining Co. on the Coulter-Schoenfeld structure north of the Many Island Lake Field. Canadian Oil & Refining Co. is planning to commence drilling on its holdings this spring. In the meantime the Sarnia Oil & Gas Co. is reported shipping in machinery to utilize the gas already developed in the Many Island Lake area in carbon black manufacture. In this area the Sarnia Oil & Gas Co. has gas rights in 14,000 acres of the holdings of the Canadian-American Oil & Gas Co. and the Medicine Hat Development Co., both of which have developed gas production.

The Dominion Lands Office at Edmonton, Alta., has received many requests, chiefly from the United States, for samples of the Athabaska tar sands for experimental purposes. Last season 20 tons of the tar sands were brought from the McMurray area and stored in Edmonton, to facilitate distribution to those who wished to experiment with various extraction processes.

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Kansas Oil Field News

By C. D. Lockwood

Storms sweeping State shut down wildcats temporarily but staking of new locations and building of rigs continues, promising record activity within 90 days. Rice County wildcat making 115 bbls. in fourth day. Clark County wildcat nearing interesting stage, being watched. Good producer in Agard Pool.

Developments in the Kansas fields continued to be of little interest so far as completions are concerned, and with the worst storms of the winter sweeping over the State, many wells in the wildcat regions were shut down temporarily. The continued staking of new locations and the building of new rigs added increasing evidence to the indications of a tremendous play that, in the opinion of many veteran scouts, will exceed anything in the Mid-Continent during the coming 90 days.

The Rice County wildcat, Hipple & Childes' No. 1 Welch, SE cor. SW NW, Section 35-20-6w, which has created interest second only to the Russell County find, was put on the pump and made 140 bbls. the first 24 hours, 105 bbls. the second and third days each, and 115 bbls. the fourth 24 hours. Gravity of the oil tests 37 degrees.

Operations throughout Kansas for the week ended March 8 remained practically the same as for the previous week. On the latter date there were 29 locations, 87 rigs, 97 wells drilling, 61 wells shut down and 11 completions, a total of 285 operations. This was a gain of 4 locations, 4 rigs and 13 drilling wells, while it represented a loss of 1 well shut down, and 19 fewer completions, making the total gain for the week only 1 operation.

The timbers were on the ground for new Rice County tests by Purdy and others in their No. 1 Bush, NE cor. Section 7-20-6w, and the Rino Oil Co. in its No. 1 Dees, SE cor. NW, Section 35-19-6w.

In McPherson County, the Remona Oil Co. had timbers on the ground for a new location in its No. 1 Thiesson, NW cor. SW, Section 26 21-5w.

In Reno County, Hipple and others were building a rig for their No. 1 Sallee, NW cor. SE, Section 3-22-6w.

Clark County had a wildcat nearing the interesting stage, the Watchorn Oil & Gas Co.'s No. 1 Manis, SW cor. NW NW, Section 21-32-21w, which was drilling at 2,800 feet.

In Marion County, Grow and others shut down their No. 1 Saper, NE cor. SW NW, Section 2-21-5, at 1,300 feet. Wentworth and others were drilling at 2,100 feet in their No. 1 Sauble, NE cor. NW, Section 14-21-5, and Sheedy and associates had a dry hole in their No. 1 Davis, SE cor. NW NW, Section 33-21-5, at 2,397 feet.

In Harvey County, Duquett and others were fishing for tools in their No. 1 Thames, SW cor. SE, Section 20-22-2, with a show of oil at 2,649 feet. The Derby Oil Co.'s No. 1 Brandeweide, SE cor. NW NE, Section 4-23-2, was drilling at 2,950 feet. The Newton Oil Corp.'s No. 2 Wetschenski, CSL SW NE, Section 4-23-2, was shut down at 2,580 feet.

Cowley County

In Cowley County, Lewis Oil Co. found 2,000,000 feet of gas in its No. 1 Elliott, SE cor. SW SE, Section 31-30-6, and was running the 6-inch pipe at 2,835 feet. Shawver & Elwell shut down their No. 1 Newton, NE cor. SE NW, Section 15-30-4, at 2,787 feet. Titus and others were drilling at 1,200 feet in their No. 1 Spahr, SW cor. NE SW, Section 5-31-6, and Foster and associates were drilling their No. 1 Eastman, NE cor. Section 7-31-6, at 2,260 feet. Shawver & Sutter were underreaming the 10-inch casing at 1,440 feet in their No. 1 Eastman, NW cor. SW, Section 8-31-6, and the Empire Gas & Fuel Co. was running the 6-inch pipe at 2,770 feet in its No. 1 Eastman, SE cor. Section 6-31-6. The Phillips Petroleum Co. had 11,000,000 feet of gas in its No. 1 Stout, NW cor. Section 8-31-6, in sand at 2,782-99 feet and was shut down. The Southwestern Petroleum Co. was fishing for pipe at 3,122 feet in its No. 1 Shildes, SE cor. SW NE, Section 18-32-6.

A new rig was in place for the Waite Phillips Co.'s No. 2 Johnson, C NE NW SE, Section 20-33-3. Price and others were drilling their No. 5 Martin, C NE NW, Section 36-33-4, below 1,200 feet.

Elk County

In Elk County, Roth & Bert were drilling at 200 feet in their No. 4 Porter, CSL SW SW SW, Section 12-29-8, and had a rig on the ground for their No. 5 Porter, CWL NW SW, same section. The same interests were fishing for pipe at 3,020 feet in their No. 1 Hanna, NE cor. SW, Section 13-29-8. Mitchell and others had 2,500,000 feet of gas in their No. 2 Perkins, C SE SE, Section 33 29-9, after plugging back from 1,530 feet to sand at 1,460 87 feet. Denton and associates staked a new location for their No. 2 Denton, C NE SW, Section 34-29-9. The Orr Drilling Co. abandoned as dry at 2,165 feet its No. 2 Meentz, C NW SW, Section 26-29-10. Mitchell and others had a machine up and were drilling for gas at 200 feet in their No. 1 Perkins, C SE SE, Section 6-30-9. Griffin & Frazer had a hole full of oil from sand at 1,122-28 feet in their No. 1 Carter, SE cor. NW SE, Section 30-30-11. The Southwestern Petroleum Co. abandoned the timbers for its No. 1 Strocken, SW cor. NE, Section 20-30-11.

In Chautauqua County, the Alcorn Oil Co. was spudding its No. 1 Graham, NE cor. Section 9-33-9.

Butler County

In Butler County, Branson and associates had a rig up for their No. 1 Beadles, CWL NE SE, Section 5-27-6, and J. W. Leggett and others were drilling at 1,200 feet in their No. 1 McLean, NE cor. NW NW, Section 8-27-6.

Timbers were on the ground for the Phillips Petroleum Co.'s No. 1 Brenzikafer, NE cor. NW, Section 8-23-5. Clark and others spudded and shut down their No. 1 Sturgeon, NW cor. Section 26-23-7. The Ramsey Petroleum Co.'s No. 1 Hay, SW cor. Section 16-23-6, was shut down at 2,513 feet, and Shawver & Sutter also shut down their No. 5 Craig, SE cor. SW SW, Section 23-28-5, at 2,420 feet. George Neiman was drilling his No. 1 McLean, NW cor. NE NW, Section 30-28-6, at 3,525 feet.

In the southern part of the county, a duster was abandoned by the Lewis Oil Co. at 2,851 feet. It was No. 23 Brown, CEL NW NW SW, Section 31-29-6.

Sumner County

In Sumner County, the Champlin Refining Co. had another fishing job in its No. 1 Hitchcock, NW cor. NE, Section 16-30-1w, at 3,564 feet. This interesting wildcat which had an important showing late last year and was thought to be possibly the opener of another pool, has had several tedious delays and its progress has been exceedingly slow. The Champlin Refining Co. is reported to be leasing all available acreage in the vicinity.

The Phillips Petroleum Co. had rigs in place for its No. 1 Stewart, SE cor. NE, Section 12-31-1w, and for No. 1 Brummatt, NW cor. SW, Section 27-32-2w, and staked a new location for No. 1 Felt, NW cor. Section 8-33-3w. Shawver and others also made a new location for their No. 1, SE cor. SW, Section 34-34-1w. Collins abandoned the rig for No. 1 Dillon, NE cor. Section 34-34-1w.

Greenwood County

Another good producer was added to the Agard Pool in Greenwood County by Polhaums and others, who shot their No 1 Lewis, CSL SE NE, Section 11-23-9, with 135 quarts in sand at 2,279-2,340 feet, after which it swabbed 400 bbls Total depth was 2,342 feet in slate and it was to be put on the pump. The Mid Kansas Oil & Gas Co. was spudding its No. 2 Anderson, CEL SE SW, same section, and Polhamus and others were building a rig for their No. 2 Lewis, SE cor. NE, Section 11-24-9. The same interests also had a rig on the ground for No. 3 Lewis, SW cor. SE NE, same section and were building a rig for No. 4 Lewis, CEL SE NE same section. The Transcontinental Oil Co. was spudding No. 8 Olson, NE cor. SE and No. 9 Olson, NW cor. NE SE, same section.

Tom Miller and others abandoned their No. 1 Esten, SE cor. SW, Section 7-26-9, as a failure at 2,385 feet. The Peerless Refining Co. was spudding its No. 1 Burns, SW cor. NW, Section 16-23-13, and the Skelly Oil Co. had a rig up for No. 1 Long, SW cor. NE, Section 17-23-13. The Cosden Oil & Gas Co. was drilling at 300 feet in its No. 10 Gribbin, CSL SE NW, Section 21-23-13.

McGinnis and others gave their No. 4 Agard, SW cor. SE NW, Section 14-24-9, a shot of 120 quarts in sand at 2,132-72 feet and it was good for 125 bbls. The Mission Oil Co. was spudding No. 2 Agard, CWL NW SE, Section 14-24-9, and Jackson and others were spudding their No. 1 Whipple, SE cor. SW NE, Section 14-25-10.

Rodgers and others had a hole full of oil in their No. 3 Brotton, NW cor. NE, Section 14-24-9, from sand at 2,144-92 feet and were going to give it a shot. McGinnis & Bitler also had 1,400 feet of oil in their No. 4 Brotton, NW cor. NE, same section, from sand at 2,185-2,214 feet. Miller and others had a hole full of oil in their No. 2 Hellman, NW cor. NE SW, same section, from sand at 2,140 88 feet. McGinnis & Bitler staked a location for their No. 6 Brotton, SE cor. NW SW, Section 14-24-9.

Increasing Activity

The Orlando Petroleum Co. was drilling at 4,630 feet in its No. 1 Breitkrautz, SW cor. NE SW, Section 4-24-10. The Roxana Petroleum Corp. was spudding its No. 2 Marshall, NE cor. NW, Section 34-24-9. The Phillips Petroleum Co. was drilling at 200 feet in its No. 4 Hoover, CNL NW SW, Section 3-25-9. The Mid-Kansas Oil & Gas Co. was building a rig for its No. 6 Ladd, CSL SE SW, Section 19-25-9, and was spudding its No. 5 Ladd, CWL SW SE, same section. The Derby Oil Co. had a rig in place for its No. 12 Moss, CNL NE NW, Section 30-25-9. Marshall and others found about 2,000,000 feet of gas in their No. 2 Duke, CSL SE SE, Section 22-26-9, in sand at 868 69 feet and were underreaming the 6-inch pipe. Huling and

(Continued on Page 140)

News of Mexican Fields

By George Blardone

TAMPICO, Mex., March 14.—The shallowest producer yet drilled in the Cacalilao sector of the Panuco Field, is Mexican Eagle Oil Co.'s No. 3, Lot 1 Cacalilao, which is rated conservatively as being good for 5,000 bbls. at the very shallow depth of 1,462 feet. The well was good for some 4,000 bbls. at 1,403 feet, but a little deeper drilling saw it finished as noted. In sum, this is the shallowest producer of worth in all the northern fields, with the possible exception of No. 3 Juarez, of the Mexican Atlas Petroleum Corp., which is good for 2,500 bbls. at 1,270 feet, having been completed, it will be recalled, last July. The No. 3 Juarez is about the center of the old Panuco Pool.

Another surprise well belongs in the category of elusive wildcats. It is Kern Mex Oil Fields' No. 7 La Palma, to the east of Cacalilao, which is reported as being good for 2,500 bbls. at 2,103 feet.

In the Cacalilao proper, other recent pay completions above the average are as follows: La Corona Petroleum Co.'s No. 52, Lot 4 Cacalilao, which is an 8,000-bbl. well at 1,895 feet. Mexican Sinclair Petroleum Corp.'s No. 22, Lot 1, (4-B), is rated good for 3,500 bbls. at 1,657 feet. International Petroleum Co.'s No. 47, Lot 5, is a 1,500 bbl. well at 2,120 feet. Weigand and others' No. 2, Lot 1, (2-C), is rated at 2,500 bbls. at 1,935 feet. There were a few minor completions and some failures in the Cacalilao sector as well as in the old areas of the Panuco Pool. Among the latter, East Coast Oil Co. has rather broken records for a salt water well when its No. 433 came in at 2,160 feet, with something like 30,000 bbls. of salt water to its credit.

There is nothing of interest in Topila and other miscellaneous tests in the northern fields at this writing. The South fields have no completions of late, although field operations there have been resumed.

February Completions

There were some 50 wells completed in Mexican pools during the month of February, of which 42 can be credited to the Panuco Pool, (most of which were in the Cacalilao sector), and some 6 were in Topila and other miscellaneous northern fields, while the South Fields can be credited with two failures. Of the Panuco completions 20 can be placed in the production column with new initial production of some 61,275 bbls., and the Topila and miscellaneous column notes three pay producers with new production of say 440 bbls.

The drilling interest is largely centered in Cacalilao and it is becoming axiomatic that "every driller is a contractor now," for, apart from a few of the big companies, most of the strings running, or preparing to make hole, are being operated on a percentage basis with lease owners. This refers to the extensive Lot 1 in Cacalilao more especially.

About the only new wildcat that is just spudding is over in the State of San Luis Potosi, near Guerrero station, where the Marland interests are spudding in on some acreage they have there. The few other simon-pure wildcats have already been reported as making hole. Thus far they are either too shallow to excite interest, or too deep for hope.

What Some Drillers Have Said About SPIRAL STEMS

"I will never run anything else."—Jack Woods, Shell Company, California.

"I find it is impossible to get a crooked hole. Can make a full screw in a wet hole without making mud rings."—W. A. Delaney, Texas.

"Success would have been impossible with a straight stem."—W. W. Hargrove, Colorado.

"Crooked holes will be unknown when your stem is in general use."—Ellis Green, Texas.

"A vast improvement over the straight stem, and a wonder for cavey holes."—C. L. Hunsinger, Texas.

Spiral Stem Offers 12 Advantages

1. PREVENTS CROOKED HOLES. Spiral wings have only three-quarters inch clearance and keep the bit straight in the hole.

2. INDICATES DEVIATION. Wings warn when hole starts crooked by showing wear at bottom end.

3. PREVENTS MUD RINGS. Wings have shearing action which prevents mud rings from forming.

4. CLEANS PATH FOR BAILER. Wings keep hole open and free of obstructions.

5. REDUCES WHIPPING. Wings keep rope socket in center of hole, and reduce whipping of walls with line.

6. MIXES MUD. Wings churn and mix mud making it possible to run a full screw.

7. GUARDS AGAINST CAVING. Wings keep socket and jars in center of hole and prevent them beating walls.

8. SIMPLIFIES FISHING. Wings hold string of tools in center of hole so that slip socket cannot miss going over.

9. PROTECTS CASING SHOE. Wings keep tools in center of hole when drilling below cemented string of casing, and prevent shoulder of bit from striking casing shoe.

10. PROTECTS CASING FROM LINE CUTTING. Wings hold line in center of hole.

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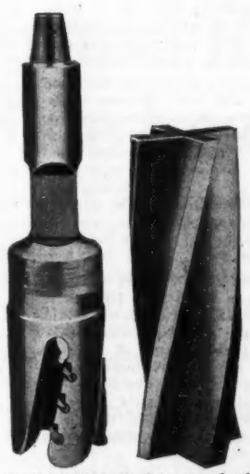

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SPIRAL STEM
SPIRAL ROTARY DRILL COLLAR

Oklahoma Field Operations

By C. D. Lockwood

Cromwell Pool in northern Seminole County provides sensation of week with gusher good for 2,085 bbls., another making 38 bbls. an hour and a third on top of sand with excellent showing; Clark & Cowden wildcat in Jefferson County had 1,800 feet of oil in hole; Burbank decline in production large.

The best producer yet to be drilled in the Cromwell Pool in northern Seminole county was the sensation of the week in the Oklahoma fields, the new gusher making 2,085 bbls. in the first 24 hours from sand at 3,494-3,502 feet. It was T. B. Hoffer and the Shoreline Oil Co.'s N. 1 Stidham, NE cor. SE NE, Section 16-10-8, and in its first few hours flowed at the rate of 100 bbls. an hour. This well has been carried as belonging to the Gessell Drilling Co. Two other tests in this pool indicate that the operators who predicted that the Cromwell Pool would be the best one of the several now under development in that part of the State knew what they were talking about. The McMann Oil Co.'s No. 1 King, SW cor. NW, Section 22-10-8, was flowing 38 bbls. an hour from sand at 3,449-53 feet, and the Cosden Oil & Gas Co.'s No. 2 Willis, SW cor. SE NW, Section 15-10-8, was producing about 75 bbls. with the sand just topped at 3,463 feet. They were runing the 5-inch casing preparatory to drilling in. The Gypsy Oil Co.'s No. 1 Bruner, NE cor. NW SW, Section 15-10-8, was deepened to 3,313 feet and was producing 55 bbls. an hour. The Shaffer Oil & Refining Co.'s No. 1 Sally Little, SW cor. NW NE, Section 10-10-8, was estimated good for 20,000,000 feet of gas from sand at 2,716-21 feet.

Clark & Cowden's wildcat in Jefferson County, CEL NW NW, Section 25-6s-6w, which was mentioned last week as having a showing of oil at 2,095 feet, was deepened 5 feet in the sand and looked good for 50 to 60 bbls. with 1,800 feet of oil in the hole, and tubing was being run. The Humble Oil Co. and the Magnolia Petroleum Co. were reported paying from $50 to $60 an acre for leases southeast of the well.

Stroud District Tests

Several tests in the Stroud District of Lincoln County are getting down to the interesting stage, and with the formations running high in some of them as compared with the four producers in the pool, indicating that they are higher up on the structure and should be even better wells, developments in that area should attract considerable attention in the next week or two.

In Roger Mills County, the Roxana Petroleum Corp. was pulling the pipe in its No. 1 Leedy, CWL NE NE, Section 9-16-21w, preparing to abandon it at 4,055 feet.

Burbank's Largest Loss

The Burbank Field reported the largest loss in daily average production that it has shown since it started down from the recent peak, and, in spite of nine additional producers making the total number of wells in the field 1,223, the output fell to 92,705 bbls., a loss of 3,868 bbls. Tonkawa also showed a slight decline amounting to only 383 bbls., the daily average production from that field for the week ended March 12 being 37,676 bbls. Wewoka increased to the extent of 865 bbls., reporting an average of 10,244 bbls. daily for the field from 41 producers, an increase of two wells. The addition of one well to the Papoose Pool in Hughes County raised its output to 2,014 bbls., an increase of 719 bbls. from six wells, and the Cromwell Pool in northern Seminole County gained 530 bbls. with one more producer raising the number of wells to four. The pool's production was 1,062 bbls.

Operations in the State were comparatively stationary during the week, the total number of 1,573 being only five greater than the figure for the previous week. Of this number, 72 were locations, 202 rigs, 945 wells drilling 278 wells shut down, and 76 completions. In comparison with the week before, this was a gain of two locations, six wells drilling with 11 more wells shut down, while there was a loss of 13 rigs, and one completion.

Burbank Production

Daily average production in the Burbank Field for the week ended March 12, was as follows:

Company—	Wells	Bbls.
Carter Oil Co.	170	7,907
Comar Oil Co.	7	283
Cosden Oil & Gas Co.	68	1,481
Devonian Oil Co.	16	383
Gardner Pet. Co.	20	633
Gypsy Oil Co.	167	12,302
Kewanee Oil & Gas Co.	12	190
Laurel Oil & Gas Co.	16	393
Lorraine Pet. Co.	15	334
Midland Oil Co.	5	134
Mid-Kansas Oil & Gas Co.	27	3,543
Peters & Oliphant	1	145
Phillips Pet. Co. and Delmar Oil Co.	5	3,164
Phillips Pet. Co.	42	5,848
Phillips Pet. Co. and Skelly Oil Co.	158	8,444
Prairie Oil & Gas Co.	90	2,004
Producers & Refiners Corp.	28	714
Roxana Pet. Corp.	57	1,108
Simons, Moore et al	29	439
Sinclair Oil & Gas Co.	137	6,771
Skelly Oil Co.	16	2,118
Tidal-Osage Oil Co.	42	1,044
Twin State Oil Co.	8	269
Total	1,130	59,501
Kay County—		
George S. Bole	2	1,058
Carter Oil Co.	4	2,606
Comar Oil Co.	13	3,436
Cosden Oil & Gas Co.	3	1,744
Gypsy Oil Co.	9	2,907
Laurel Oil & Gas Co.	1	27
Phillips Pet. Co.	13	6,412
Mid-Kansas Oil & Gas Co.	6	4,952
Prairie Oil & Gas Co.	2	1,100
Pure Oil Co.	2	567
Roxana Pet. Corp.	3	1,001
Dye, Tomlinson et al	8	1,237
Skelly Oil Co. and Phillips Pet. Co.	13	999
Sinclair Oil & Gas Co.	2	1,306
The Texas Co.	2	1,026
Twin State Oil Co.	10	2,826
Total	93	33,204
Total Burbank	1,223	92,705
Total last week	1,214	96,573
Difference	9	3,868

Daily average pipe line runs from the field were as follows: Gulf Pipe Line Co., 16,393 bbls.; Cosden Pipe Line Co., 4,699 bbls.; Kay County Gas Co., 4,991 bbls.; Osage Pipe Line Co., 2,686 bbls.; Oklahoma Pipe Line Co., 13,253 bbls.; Prairie Pipe Line Co., 4,591 bbls.; Sinclair Pipe Line Co., 8,077 bbls.; Moore Refining Co., 2,917 bbls.; Empire Pipe Line Co., 1,560 bbls.; Magnolia Pipe Line Co., 2,262 bbls.; Ozark Pipe Line Co., 3,886 bbls.; Texas tank car, 1,026 bbls. Total, 76,331 bbls.

Amounts run to storage were: Mid-Kansas Oil & Gas Co., 8,370 bbls.; Standish Pipe Line Co., 12,168 bbls.; Twin State Oil Co., 1,825 bbls.; Delmar Oil Co., 1,157 bbls.; Skelly Oil Co., 2,118 bbls.; Phillips Petroleum Co. & Skelly Oil Co., 726 bbls. Total, 26,374 bbls.

Some good wells were included in the late reports from the Burbank Field On the Osage County side of the line, the Phillips Petroleum Co. & Delmar Oil Co.'s No. 6, NE cor. SE, Section 10-27-5, was good for 61 bbls. an hour from sand topped at 2,952 feet, with first oil at 2,958 feet and first flow at 2,960 feet, and was still drilling in sand at 3,000 feet. This well offsets Tract No. 625, sold at the lease sale. The same companies' No. 10, NE cor. NW NE, same section, flowed 2,400 bbls. natural from sand at 2,945-89 feet. First oil came at 2,946 feet. The Gypsy Oil Co.'s No. 10 Matthews, NW cor. NE, Section 10-27-5 offsetting Tract No. 624, tanked 314 bbls. in the first 14 hours from sand at 2,950-92 feet, with first oil at 2,955 feet.

Kay County Extension

In the Kay County extension the Cosden Oil & Gas Co.'s No. 2, SW cor. SE NW, Section 10-27-5, produced 640 bbls. in the first 19 hours from sand at 2,941-81 feet. First oil was found at 2,951 feet. The Carter Oil Co.'s No. 4, NE cor. SE SW, same section, was good for 250 bbls. natural from sand topped at 2,980 feet, with first oil at 2,999 feet and total depth at 3,021 feet. The same company's No. 5, SE cor. SW SW, same section, topped the sand at 3,012 feet, struck first oil at 3,017 feet, and at total depth of 3,024 in sand was good for 1,350 bbls. in the first 24 hours, natural. The Mid-Kansas Oil & Gas Co.'s No. 5, NW cor. NE SE, Section 9-27-5, made 1,000 bbls. natural the first 24 hours from sand at 2,940-68 feet. First oil came at 2,945 feet. The Roxana Petroleum Corp.'s No. 3, NW cor. SW NE, Section 4-27-5, topped the sand at 2,887 feet, found gas at 2,893, oil at 2,894 feet and at 2,918 feet, total depth, had 2,200 feet of oil in the hole natural. It was shot with 60 quarts and responded with 400 bbls. production. The Gypsy Oil Co.'s No. 8 Sands, SE cor. NE SE, Section 4-27-5, made a 300-bbl. well after a 50-quart shot in sand at 2,902-23 feet. Top of sand was 2,876 feet, oil at 2,881, gas at 2,887, real pay at 2,916-23 feet.

Burbank Extension

In the Burbank extension, Kay County, the Roxana Petroleum Corp.'s No. 3 Pappan, CWL NW SW NE, Section 4-27-5, was good for 400 bbls. after a shot of 60 quarts in sand at 2,894-2,918 feet. Top of sand was reached at 2,887 feet, with first gas at 2,890 and first oil at 2,894 feet, where it had 2,200 feet of oil in the hole natural. The Comar Oil Co. had timbers on the ground for its No. 2 Mehojah, CEL NE SE SW, same section. George S. Bole shot his No. 2 Gaston, CEL NE SE NW, same section, for the second time, giving it 20 quarts in sand at 2,910-20 feet, and it made 250 bbls. afterward. The Cosden Oil & Gas Co.'s No. 2 Sands, CSL SW SE NW, Section 10-27-5, was estimated good for 10,000,000 feet of gas in the sand topped at 2,941 feet, and was also making 75 bbls. of oil from the pay at 2,943-63 feet. The Skelly Oil Co. and Phillips Petroleum Co. abandoned the rig for their No. 5 Thompson, SW cor. NW, Section 22-27-5.

In the Burbank Field proper, the Skelly Oil Co. and Phillips Petroleum Co. had 2,500 feet of oil in their No. 2, CLS SE SW NE, Section 26-27-5, from sand touched at 2,925 feet, and drilled to 2,970 feet, still in the sand. First oil was found at 2,940 feet, and it made one flow of 20 bbls. at 2,948 feet. It was to be shot. The Phillips Petroleum Co.'s No. 7, C NW SE NW, Section 23-27-5, was good for 300 bbls. after a 120-quart shot in oil sand at 2,989-3,036 feet. Gas sand was topped at 2,976 feet. The same company's No. 10, C SE NW NW, same section, made 700 bbls. natural from sand topped at 2,970 feet. First oil came at 2,973 feet, and the first flow at 2,977. Total depth was 3,031 feet.

The big Grant County gasser, the Western States Oil Corp.'s No. 1 Lane, NE cor. Section 27-27-3w, which has been producing 33,000,000 feet of gas from sand at 4,000-32 feet, had the 6-inch pipe set at 4,016 feet and was mudding off the gas to drill deeper.

In northern Kay County, the Mid-States Petroleum Co. was drilling at 3,660 feet in its No. 1 Carder, SW cor. SE, Section 8-28-2e. McCaskey & Wentz' No. 20 Welch, NE cor. NW SW, Section 17-28-1e, was temporarily abandoned at 3,275 feet. In eastern Noble County, George Miller was drilling at 4,150 feet in his No. 1 Harsh, NE cor. Section 9-22-2e.

In Garvin County, the Empire Gas & Fuel Co. was reported to be blocking acreage around Section 27-2n-1w, at an average price of $5 an acre. West of Ada in Pontotoc County, Haney & Stalter were reported to have blocked 930 acres on a structure worked out by a Tulsa geologist in Sections 17, 18, 19 and 20-4-4, at $6.50 and $7 an acre.

The Carter Oil Co. was reported to have purchased from the Independent Oil & Gas Co. and the Sinclair Oil & Gas Co., 105,000 bbls. of oil in storage in the Wewoka Pool, Seminole County, together with the tank farm including two tanks of 80,000-bbl. capacity and one of 37,500 bbls. for a consideration of $310,000. The price of the oil was $2 a bbl. and the storage $110,000 the first cost price.

Duster Near Newkirk

Near Newkirk, in Kay County, a duster was recorded by Deleplane and others in their No. 1 Carden, SW cor. SE, Section 8-28-2e. It was abandoned at 3,035 feet. The Comar Oil Co. was drilling at 1,475 feet in its No. 1 Williams, NE cor. SE NE, Section 7-27-2e. Near Blackwell, the Globe Refining Co.'s No. 1 Jackley, SE cor. Section 8-27-1w, was shut in for 13,000,000 feet of gas in sand at 3,478-88 feet but may be deepened. The National Union Oil Co.'s No. 1, NE cor. SW, Section 16-27-1w, was estimated good for 1,000 bbls. after shots of 30 and 40 quarts in sand at 3,156-81 feet. Later it stopped flowing and was to be drilled deeper and shot again. The Alcorn Oil Co.'s No. 1 Hubbard, CSL NW, Section 12-26-2w, was put on the pump and made 224 bbls. natural the first 24 hours from sand at 3,660-3,761 feet. The Mariand Refining Co. had a cellar and slush pit completed and was building the rig for its No. 1 Thomas, SW cor. Section 15-25-2w.

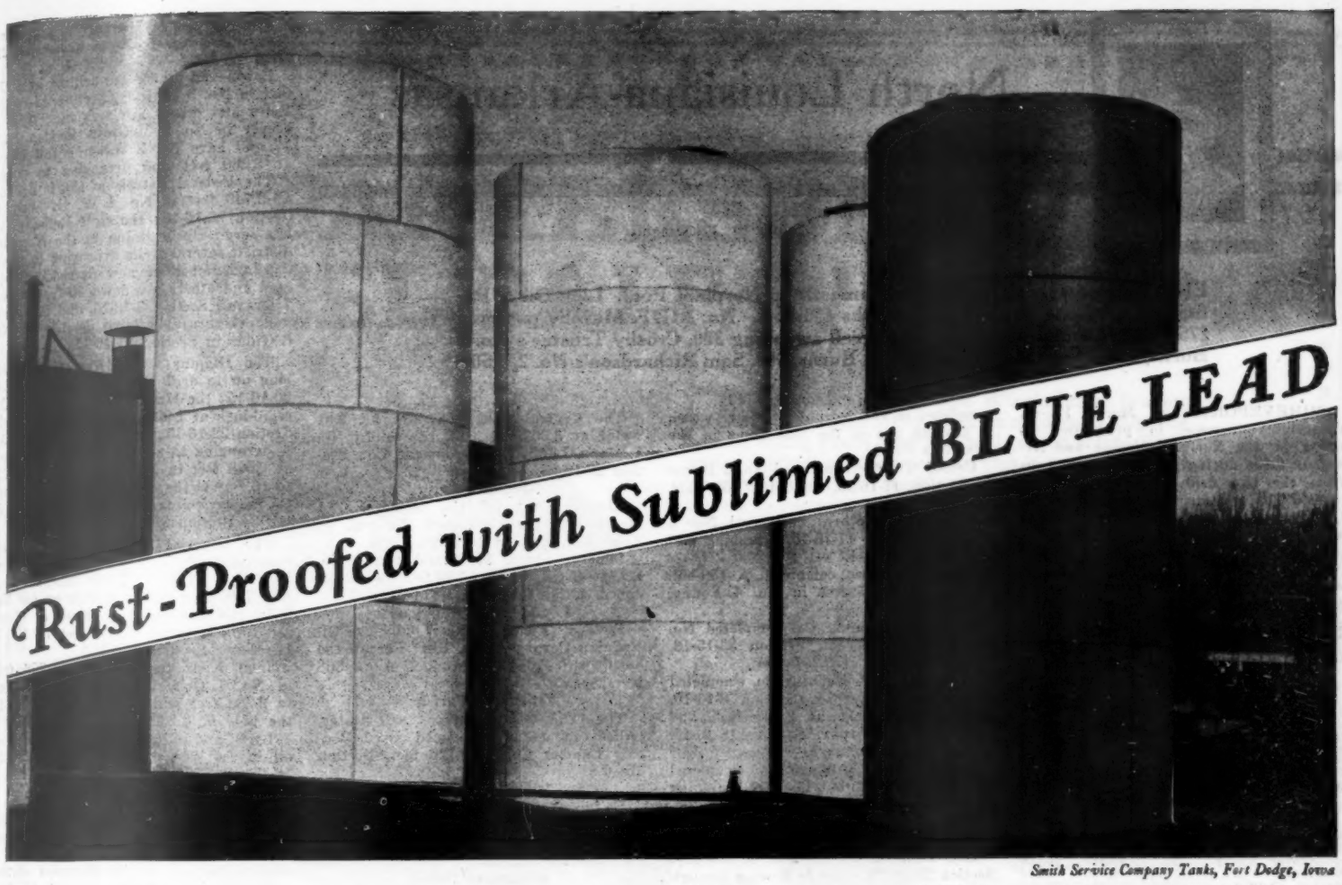
In the Tonkawa Field, Noble County side, the Comar Oil Co.'s No. 9-B Ellsworth, SW cor. NW NE, Section 2-24-1w, was good for 175 bbls. natural from sand at 1,824-60 feet; No. 11-A Ellsworth, CWL SW NE, same section, made 368 bbls. natural from sand at 2,196-2,212 feet; No. 12-A Ellsworth, CSL SW NE, same section, produced 165 bbls. natural from oil sand at 1,822-40 feet; No. 13-B Carmichael, CSL SE NE, Section 3-24-1w, pumped 13 bbls. after a 20-quart shot in sand at 2,066-80 feet. The Healdton Oil & Gas Co.'s No. 14 Reser, CSL SE NW NW, Section 11-24-1w, was good for 165 bbls. natural from oil pay at 2,596-2,600 feet.

In the Osage

In the Osage, the Devonian Oil Co.'s No. 8, CNL NE NW, Section 34-25-11, was a 10-bbl. producer after a shot of 140 quarts in the Bartlesville sand at 1,690-1,747 feet. The Cosden Oil & Gas Co. had a 12-bbl. pumper in the Bartlesville horizon at 1,803-21 feet in its No. 2, CNL NE SE, Section 23-23-10. The Owen-Osage Oil Co.'s No. 2, NW cor. SE, Section 22-29-12, was good for 550 bbls. natural from sand at 1,640-41½ feet. The Osage Development Co.'s No. 2, CSL NE NW, Section 35-29-11, was drilling at 600 feet.

The Tidal-Osage Oil Co.'s No. 15, C NW SE SW, Section 6-26-6, which was

(Continued on Page 144)



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North Louisiana-Arkansas

By M. L. Vaughn

Eleven producers in Union County, mostly in Norphlet Pool. Lion Oil & Refining Co.'s No. 4 G. E. Murphy swabs 450 bbls. No. 3 G. F. Murphy pumping 275, De Lukis and others' No. 3 Harrell swabbing 300, Crosby Trustee's No. 2 Burns, 250; Weisman Oil Co.'s No. 1 Burns, 500. Sam Richardson's No. 2, 3,500.

SHREVEPORT, La., March 17.—A substantial increase in production is noted in the North Louisiana and Arkansas fields during the past week, runs from the two fields averaging 174,620 bbls. a day, an increase of 4,695 bbls. Completions in the Smackover district are largely responsible for the added output of the field, particularly in the Norphlet district where two 5,000-bbl. wells have been recently completed. Production from the Arkansas Field aggregated 124,340 bbls. a day and that from North Louisiana 50,280 bbls. a day, distributed as follows:

North Louisiana	This Week	Last Week
Caddo light	7,475	7,570
Caddo heavy	2,800	2,500
De Soto and Red River	4,630	4,515
Elm Grove	1,075	890
Haynesville	20,200	20,300
Homer	8,650	8,200
Bellevue	5,450	5,650
Total	50,280	49,625
South Arkansas		
El Dorado	13,625	14,300
Smackover light	26,915	26,300
Smackover heavy	79,100	75,000
Stephens	2,750	2,700
Nevada County	1,950	2,000
Total	124,340	120,300
Total both fields this wk.	174,620	
Total both fields last wk.		169,925
Increase		4,695

Cotton Valley Producer

The Cotton Valley district is again in the limelight following the opening up of the Fortuna Oil Co.'s No. 1 Merritt, in Section 14-21-10, a little more than a quarter of a mile southwest of the Louisiana Oil Refining Corp.'s producing well in this territory.

The Fortuna well was completed some time ago as a gas well with a light spray of oil, and when the Oil Fields Gas Co. completed the producing well on the Merritt land, the Fortuna decided to drill a little deeper with the result that their well is now making 25,000,000 feet of gas and 100 bbls. of oil, flowing through 6-inch flow line.

Considerable difficulty is being experienced with sand cutting the connections and it has not yet been determined whether the water showing is fresh or salt water, but extensive development of the territory is assured by the successful completion of a second producing well.

The Ohio Oil Co.'s Merritt well, also completed as a gas well in Section 14-21-10, has been blowing for several days and the amount of oil is steadily increasing. It is now making about 10 bbls. of oil a day through 1¼-inch choke.

The discovery well, drilled by the Oil Fields Gas Co. and now owned by the Louisiana Oil Refining Corp., is still making over 100 bbls. a day, flowing through ¾-inch choke.

Union Parish development is not very encouraging. The discovery well, drilled by Palmer & Davidson on the Frost Johnson lease in Section 17-23-1e, was put on the beam last week and pumped dry after making about 25 bbls. of accumulated oil. Other wells in this territory are getting slight showings of oil but nothing of commercial value.

Arkansas Completions

Completions in the Smackover Field, Union County, Arkansas, numbered 13, with 11 producers, 1 gas well and 1 failure. New production amounted to 5,945 bbls. Most of the producing wells were completed in the Norphlet district which is proving one of the best pools in the Arkansas Field.

Crosby Trustee completed No. 2 Burns in Section 17-16-15, swabbing 250 bbls. at 2,060 feet.

Delukis and others completed No. 3 Harrell, Section 17-16-15, swabbing 300 bbls. at 2,080 feet.

George & Jones completed a 150-bbl. pumper at 2,077 feet in No. 4 Young, Section 18-16-15.

The Gulf Refining Co. completed No. 15 Lewis Werner in Section 32-15-16, flowing 60 bbls. at 2,257 feet.

The Lion Oil & Refining Co. completed No. 4 G. E. Murphy, Section 8-16-15, swabbing 450 bbls. at 2,100 feet, and No. 3 G. F. Murphy, Section 18-16-15, pumping 275 bbls. at 2,058 feet.

The Phillips Petroleum Co. completed No. 4 Alphin, Section 11-16-15, pumping 250 bbls. at 1,992 feet and No. 4 Giller, Section 11-16-15, pumping 170 bbls. at 2,002 feet.

Sam Richardson's No. 2 E. G. Murphy, Section 23-16-15, came in flowing through 4½-inch casing, 3,500 bbls. at 1,988 feet.

Smitherman & McDonald completed No. 3 Holloway, Section 6-16-16, flowing 450 bbls. at 2,255 feet.

The Weisman Oil Co.'s No. 1 Burns in Section 17-16-15 is swabbing 500 bbls. a day at 2,053 feet.

Murphy Trustee, completed No. 3 Lawton in Section 7-16-15, making 25,000,000 feet of dry gas at 2,415 feet.

Garrett and others abandoned their deep test on the Robinson lease in Section 33-18-14, 4 miles east of South El Dorado production, after drilling to a depth of 2,945 feet.

Ouachita County

Eleven wells were completed in the Ouachita County Field last week, all in the light oil territory. Harry Anderson, Trustee, completed No. 72 Anderson, Section 21-15-17, flowing 70 bbls. at 2,370 feet.

Bashara and others put No. 2 T. C. Patton on the beam with 100 bbls. production at 2,275 feet, Section 32-15-16. Doctor Clark completed No. 3 Berry, Section 24-15-17, flowing 160 bbls. at 2,296 feet.

The El Dorado Union Oil Co. brought in No. 5 Shirey, Section 30-15-16, flowing 110 bbls. at 2,285 feet. The Gulf Refining Co. completed No. 3 Meek, Section 12-15-16, flowing 150 bbls. at 2,300 feet and No. A-2 Werner, Section 36-15-17, pumping 45 bbls. at 2,289 feet.

Klatz & Thomas completed No. 3 Peace, Section 26-15-17, flowing 45 bbls. at 2,350 feet. Snowden & McSweeney completed No. 4 Taylor, Section 29-15-16, flowing 115 bbls. at 2,299 feet.

The Standard Oil Co. completed No. 1 Minor, Section 21-15-16, pumping 45 bbls. at 2,290 feet. The Texas Co. brought in No. 3 L. Grone, Section 30-15-16, flowing 140 bbls. at 2,267 feet and made a 50-bbl. pumper of No. 5-A Solmson at 2,286 feet, Section 29-15-16.

Columbia County

The Atlantic Oil Production Co. put No. 4 Jackson on the beam with 15 bbls. production at 2,150 feet, Section 23-15-20 and No. 4 W. M. Wepfer, Section 25-15-20, pumping 27 bbls. at 2,116 feet.

The Central Coast Oil Co. hit salt water at 3,357 feet and abandoned No. 1 Mann Land & Development Co., Section 22-15-25.

Nevada County

The Prescott Oil Co. tested No. 1 Henry dry and abandoned the well at 2,685 feet, Section 10-12-20.

Smitherman & McDonald tested No. 1-A Womack dry at 1,350 feet and abandoned the well, Section 10-14-21.

Louisiana Completions

Bellevue Field: The Louisiana Oil Refining Corp. put No. 18-D Fee on the beam with 10 bbls. production at 368 feet, Section 15-19-11.

Bienville Parish

The Ohio Oil Co. struck salt water, pulled casing and abandoned No. 1 Bodcaw Lumber Co. at 3,126 feet, Section 19-16-6.

Bossier Parish

Bolinger, Sales & Walker struck salt water flow at 2,800 feet in No. 1 Bolinger, pulled casing and abandoned the well, Section 3-22-12.

Morehouse Parish

Ladell and associates completed No. 20 Fee, Section 20-19-5e, making 10,000,000 feet of gas at 2,248 feet.

Ouachita Parish

The Southern Carbon Co. brought in No. 26 Fee, making 10,000,000 feet of gas at 2,169 feet, Section 7-19-5e.

Union Parish

Evans and associates struck salt water at 2,427 feet in No. 1 Cole and abandoned the well, Section 16-22-2w.

The Ohio Oil Co. pulled casing and abandoned No. 1 Dutcher Lumber Co. at 2,645 feet, Section 15-20-1w.

Webster Parish

Palmer & Blunt struck fresh water at 1,201 feet and abandoned No. 1 Anders, Section 6-18-10.

Union County Drilling

A steady increase in drilling operations is noted in the Smackover Field, particularly in the Norphlet district, where the pool is being extended in all directions.

Anderson and others set 6-inch casing at 1,860 feet in No. 1 Billyeu and 10-inch at 180 feet in No. 2, Section 8-16-15; the Amerada Petroleum Corp. is arranging to test at 2,235 feet in No. 2 Flenniken, Section 6-16-15, and the Arkansas Fuel Oil Co. is drilling at 1,650 feet in No. 2 Alphin, Section 11-16-15, and at 2,110 feet in No. 1 Lagrone, Section 1-16-17.

Bement and others are drilling at 1,750 feet in No. 1 Laney, Section 8-16-16; Bonderant and others at 1,850 feet in No. 1 Tuberville, Section 9-18-12, 15 miles east of the South El Dorado Field.

J. W. Clark is drilling at 1,750 feet in No. 5 Cook, Section 17-16-15, set 6-inch at 2,055 feet in No. 1 Smith and drilling at 1,200 feet in No. 2 Smith, Section 16-16-15.

Clark & Melat set 10-inch casing at 60 feet in No. 3 Wells, Section 15-16-15; Crawford & Sebastian set 6-inch at 1,900 feet in No. 2 Graves, Section 3-16-15; Daniels and others are drilling at 800 feet in No. 2 Ezell, Section 18-17-14, and the Dunn Oil Co. is drilling out plug in 6-inch at 1,960 feet in No. 2 McKinney, Section 18-16-15.

Early Dean and others are building derrick for No. 1 Hayes in Section 21-16-15.

Eason and others are drilling at 1,[illegible] feet in No. 3 Murphy, Section 15-16-15; Estes and others are arranging to drill deeper in No. 2 McGraw, Section 1-16-17 and have No. 3 standing full of oil at 2,260 feet and arranging to pump.

The Federal Petroleum Co. is drilling at 2,740 feet in No. 4 W. H. Murphy, Section 22-16-15; the Gulf Refining Co. has seven rigs running in the Norphlet district, several wells arranging to pump and a number of new derricks; Hickman and others are down 50 feet in No. 7 Graves, Section 3-16-15, and Hollyfield and others are building derrick for No. 6 Giller in Section 11-16-15.

The Higgins Oil & Fuel Co. is rigging up to drill No. 1 Hicks in Section 20-16-15; the Humble Oil & Refining Co. set 6-inch at 1,930 feet in No. 1 Adcock, Section 22-16-15; the Humphreys Oil Co. is arranging to set 2½-inch with packer at 2,030 feet in No. 2 Hays, Section 21-16-15, and the Humphreys Petroleum Co. is arranging to pump No. 2 R. J. Hicks, Section 20-16-15.

The Imperial Oil & Gas Co. is arranging to drill in with cable tools at 2,085 feet in No. 1 T. G. Murphy, Section 7-16-15, and has derrick up for No. 2 in the same section; Keen & Woolf set 10-inch casing at 67 feet in No. 1 Hinshaw, Section 17-16-15.

John Knox tested dry at 2,258 feet in No. 1 Golf, Section 8-16-16, drilled to 2,262 feet and has 800 feet of oil in the hole at 2,262 feet.

Lyell and others have 1,200 feet of oil in the hole at No. 1 fee, Section 3-16-15, at 1,996 feet.

New Locations

The Lion Oil & Refining Co. has five rigs and derricks and three new locations on the Murphy land in Sections 7, 8, 9 and 16-16-15, and the Magnolia Petroleum Co. is arranging to test 18 feet of sand at 2,275 feet in No. 1 Fagg, Section 8-16-16, rigging up to drill No. 3 Neely in Section 1-16-17, and set 10-inch at 175 feet in No. 1 Smith, Section 2-16-17.

Lumis and others are drilling at 2,700 feet in their deep test on the Cullins land in Section 3-19-15, in the south end of the El Dorado Field.

H. I. Morgan tested salt water with a showing of oil at 2,887 feet in No. 2 Polk & Ezell, Section 12-17-15, and is going to plug back five feet to the top of the sand.

Hill Myers has derrick up for No. 1 McKinney, in Section 18-16-15; the Natural Gas & Petroleum Co. is rigging up to drill No. 2 Ballard in Section 15-16-15, and set 6-inch at 1,993 feet in No. 2 Murphy, Section 17-16-15.

The Phillips Petroleum Co. has derrick up for No. 5 Giller in Section 11-16-15; the Plateau Oil Co. set 4½-inch casing at 2,250 feet in No. 1 Tatum, Section 7-16-15, and the Preston Oil Co. has derrick up for No. 1 S. D. Cook, Section 17-16-15, and rig up for No. 1 Cook in Section 16-16-15.

The Pure Oil Co.'s No. 6 Craig in Section 15-16-15, is full of oil at 2,016 feet, setting 2½-inch with packer, and rigging up to drill No. 3 Smith in Section 18-16-15; Ray and others are drilling at 1,150 feet in No. 3 Tatum, Section 7-16-15, and the Roxana Petroleum Corp. set 6-inch casing at 1,995 feet in No. 4 Murphy, Section 21-16-15, drilling at 1,950 feet in B-2 J. R. Murphy, Section 15-16-15, and derrick up for No. 3, and set 6-inch at 1,987 feet in No. 3 T. D. Murphy, Section 7-16-15.

Simon and others set 4½-inch casing at 2,270 feet in No. 1 Houston, Section 12-16-16; Smitherman & McDonald are rigging up to drill No. 4 Holloway, Section 6-16-16, arranging to pump Saxon No. A-4, and rigging up to drill Saxon No. A-5, in Section 32-15-16, and the Standard Oil Co. is arranging to pump No. 1 Alphin and set 10-inch casing at 120 feet in No. 12, Section 11-16-15, and

(Continued on Page 137)

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California Field Operations

By L. P. Stockman

Monthly figures for February expected to show draft upon crude stocks in California. General expectation crude and refined oil prices will advance shortly. Torrance leading in activity with 15 producers with output of 6,575 bbls. daily completed during the past week.

LOS ANGELES, Cal., March 15.—The recent increases in Texas and Mid-Continent crudes, together with the rapid decline of California production, have proven a source of gratification to California operators and it seems to be the consensus of opinion that there will be further advances in California crude prices in the very near future. Practically everyone admits that an increase is inevitable in both crude and refined oils and the prediction of 25-cent gasoline in California during the coming summer indeates that the industry is rapidly recovering from a very trying period.

It would not be surprising if both crude and refined oils were advanced in California before the first of April and, while there was a surplus accumulated during January, it is expected that the regular monthly figures compiled by the Pacific Coast office of the American Petroleum Institute will show a draft on storage during February. Several of the major operating companies have been drawing on stocks for the past three or four months and practically all of them having contracts with Eastern refiners have cut down their Eastern shipments to a minimum.

The General Petroleum and California Petroleum will, of course, continue making shipments to the East Coast since they have no local outlet for their production. Until the recent overproduction, the former company had disposed of its output to the Standard Oil Co. of California, but for some time deliveries of crude and refined oils have been made to the Atlantic Refining Co. exclusively. During the past few months the General Petroleum Co. has also been supplying the Julian Petroleum Corp. with its gasoline for local consumption. The California Petroleum has been accumulating a storage of crude and at the same time has been making deliveries to the Standard Oil Co. of New Jersey in accordance with the contract between the two, made several months ago. The company's production has been dropping quite steadily and for the first time this company has gone out into the open market and bid for oil. Several of the larger companies have even advanced money to smaller operators in order that their wells may be completed as soon as possible. The loan in each case is to be repaid in oil.

Torrance

Fifteen new producers with a combined daily output of 6,575 bbls. were brought in at Torrance during the past week, while approximately six others were being prepared for production and should be the first on the list for the coming week. The largest new producer stands to the credit of the Sentinel Oil Co., although there were several other good completions. The Sentinel's new well, No. 2 Joughin, which was drilled to 3,830 feet and finished with a 6¼-inch oil string landed on bottom, is the best completion recorded at Torrance in several weeks. Flowing through a ½-inch bean, under a pressure of 320 pounds, it produced 1,252 bbls. of clean 19.6 gravity oil during the first 24-hour production test. For the first few hours it flowed at a much greater rate, but soon settled down to a little less than the first full day's flow.

The Van Allen Oil Co. also completed a good well for this field, which has never been noted for the spectacular performance of its producers. The company's new well, No. 5, was drilled to 3,793 feet and finished with a 6¼-inch oil string carrying 200 feet of screen casing. During the first few hours it flowed at the rate of 600 bbls. but soon got under way and the first full day's production was 823 bbls. of 20.4 gravity oil, which showed a cut of 3 per cent. It is flowing through a ½-inch bean under a pressure of 360 pounds and although the cut is a little larger than usual, it is due to the fact that the well was making considerable sand upon completion. The production is cutting a little less than 2 per cent sand at the present time, and while the presence of sand is not a very encouraging feature, it may in time be reduced to a minimum.

The Shell Oil Co. finished its first well on the Kettler lease, although the six others spudded in on this property before the company proved it up are also rapidly nearing completion. Other operators proved up the lease and the Shell took advantage of it and erected 10 rigs practically over night.

The Petroleum Securities (Doheny) as soon as its Marble lease was proven up, immediately staked 28 locations and today the company has nine producers making 2,800 bbls. daily, 14 drillers and 5 rigs erected waiting to be spudded in.

The Shell Oil Co. is much more concerned in the drilling up of its acreage because of the drop in its production at Santa Fe Springs and Huntington Beach. The company's demand for refining crude has increased very substantially and it is a known fact that the Shell has been running short of crude for some time. This is evidenced by the fact that the company has for the first time in several years purchased crude in the open market. The Shell does not have any unusually large stock of their refining crude or tops and, with the increased demand, as the result of the installation of several hundred new service stations, it is obliged to offset the decline in production as far as possible by either drilling new wells or purchasing crude. The company will undoubtedly be in a position to build up a substantial output at Compton and may possibly be within the productive area of a new field at Rosecrans, although the company's holdings in this latter district do not at the present time appear to be very favorable.

The Shell's Operations

The Shell's first well on the Kettler lease, No. 1, was brought in from 3,812 feet with an initial production of 650 bbls. The output, testing 18.2 degrees and showing a cut of 2 per cent, is flowing through a ½-inch bean under a pressure of 400 pounds. This well is the most favorably located on this lease, although the remaining ones should at least average 200 bbls. each. The Shell also brought in No. 3 March and incidentally increased its daily field production 910 bbls. No. 3 March was drilled to 3,852 feet and the output, testing 22.4 degrees and showing a cut of 2 per cent, is flowing through a ½-inch bean under a pressure of 235 pounds.

The Petroleum Securities also put two wells on production but one of them was a recompletion after being cleaned out. The latter was No. 6 Marble, which sanded up shortly after being brought in a few weeks ago as a 360-bbl. well. Upon being put on the beam during the early part of the week, it pumped 160 bbls. of 19.2 gravity oil, which showed a cut of 2 per cent. The company's new producer was No. 28 Marble, which was finished at 3,718 feet and listed as a 650-bbl. producer. The output, flowing through a ½-inch bean under a pressure of 200 pounds, is clean and tests 23.8 degrees. The Superior Oil Co. finished No. 15 Torrance after drilling it to 3,863 feet and brought in a 472-bbl. producer. The Superior's latest success, flowing through a 7/8-inch bean under a pressure of 195 pounds, has been quite consistent for the past few days.

In addition to these comparatively large completions, there were several smaller wells brought in, the poorest one standing to the credit of the Chanslor-Canfield Midway Oil Co. The smaller producer was No. 27 Torrance, which was drilled to 3,775 feet and finished with a 6¾-inch liner. On the beam it pumped 75 bbls. a day of 21.8 gravity oil which shows a cut of 2 per cent. The Gladys Oil Syndicate's new producer was not very much larger than the C. C. M. O. Co.'s No. 27 Torrance. The former company's No. 2 was finished at 2,794 feet and pumped 88 bbls. of 22.3 gravity oil upon completion. The initial output was cutting approximately 5 per cent and, instead of decreasing, the cut increased with the result that the well sanded up. It will probably only be a small well after it has been cleaned out and put back on the beam, as the company's No. 1, located on the same lease and finished at approximately the same depth, is pumping only 75 bbls. daily.

Selby & Root completed a flowing well during the early part of the week, but it was only a small one. Their latest success, No. 4, was drilled to 3,772 feet and finished with a 6¼-inch oil string carrying 235 feet of perforated. The daily production, 200 bbls. testing 23.8 degrees and showing a cut of 1 per cent, is flowing through a ½-inch beam under a pressure of 150 pounds. The Southern California Drilling Co. was not successful in securing a flowing well and in order to complete No. 1 Johnson after drilling it to 3,782 feet had to put it on the beam. The company's new well was only a small pumper credited with an initial daily output of 135 bbls. of 20.2 gravity oil which showed a cut of 2 per cent.

The Native Petroleum Co. completed its No. 1 Bailey which is making 220 bbls. a day of clean 20.9 gravity oil. The Southland Petroleum Co.'s No. 1 Oakley, an eastern outpost well, and the Fortuna Oil Co.'s No. 1 Clark were both returned to production after being cleaned out. The former is making 450 bbls. daily, while the latter is producing 200 bbls. The Shell Oil Co. has staked a location for its No. 1 Watson about a mile east of the Southland's No. 1 Oakley.

Await Outcome of Test

It is not known how soon the Shell will actually begin drilling operations but it would not be surprising if the company awaited the outcome of the Southland Petroleum Co.'s No. 1 Winship being drilled north of the Shell's Watson lease. While No. 1 Winship is not yet deep enough to either prove or disprove the immediate territory, the Keystone Oil Syndicate's well No. 1, a half mile to the north, shows 4,685 feet of hole and has been regarded as extremely doubtful for some time. The geological department of the Shell apparently believes that these wells are too far north and that there is a possibility of picking up a small production on its Watson lease. At least it seems to be a very long shot and is considered by many as unfavorable. In the west side of the southern part of the field the Standard has decided to test its Ellinwood property and will drill a well approximately a mile west of the most westerly producer in this vicinity.

It is understood that the Chanslor-Canfield Midway Oil Co., following its usual policy, will drill an offset to the Standard's No. 1 Ellinwood and it will be known as No. 12 Del Amo. These two wells are far more favorably located than the Shell's No. 1 Watson and, although only a small production is expected, there will be room for a good many locations. There were several wells which were finished but not actually put on production during the past week and most of them should be completed within the next few days. The Chanslor-Canfield Midway Oil Co. should bring in No. 57 Torrance, No. 32 Torrance and possibly one or two others, while George F. Getty expects to put his Nos. 10 and 16 on production within the next day or two. The Hugh Miller Drilling Co. completed No. 1 A. Stackowitz for the Hub Oil Co. and this well, together with the Jameson Oil Co.'s No. 1 Lora J, should also be early completions. One of the last wells put on production during the week was well No. 21 of the U. S. Royalties, which was finished at 3,775 feet and brought in flowing 260 bbls. of clean 19.9 gravity

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TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Following is a list of tankers, date departed, destination, kind of cargo and amount in barrels:

F. Q. Barstow, March 3, New York, crude	111,942
Agwimex, March 3, Baltimore, crude	91,441
Agwistone, March 4, New York, crude	102,830
W. M. Irish, March 5, Philadelphia, refined	70,406
Agwimoon, March 5, New York, crude	72,648
Agwismith, March 6, New York, crude	103,908
Japan Arrow, March 6, New York, crude	90,020
San Fernando (Br.), March 6, Tampico, crude	118,281
Tulsagas, March 7, New York, crude	71,970
Miskianza, March 7, New York, crude	70,715
Yorba Linda, March 8, Philadelphia, refined	68,444
Coastwise	
Alden Anderson, March 3, Avon, crude	67,572
J. A. Moffett, March 3, Richmond, crude	63,322
W. S. Miller, March 4, Richmond, crude	69,358
La Purisima, March 5, Martinez, crude	39,168
Frank G. Drum, March 6, Avon, crude	72,356
Mina Brea (Br.), March 6, Vancouver, crude	49,711
J. A. Moffett, March 7, Willbridge, fuel	61,779
W. S. Miller, March 8, Richmond, crude	72,855
R. J. Hanna, March 8, Richmond, crude	73,412
Richmond, March 8, Willbridge, fuel	61,043
La Purisima, March 9, Seattle, fuel	38,691
From San Francisco	
Col. E. L. Drake, March 5, Willbridge, refined	31,820
Oleum, March 6, Coos Bay, fuel	32,095
El Segundo, March 7, Point Wells, refined	28,142
Los Alamos, March 9, Seattle, refined	45,715
Tahchee (Br.), March 9, Manila, fuel	67,409
From Port San Luis	
Coalinga, March 5, Seattle, refined	64,768
Los Angeles, March 6, Oleum, fuel	71,911
Los Angeles, March 8, Oleum, fuel	79,651

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North-Central Texas Field

By Dan F. Dugan

Texas Co.'s No. 1 Burnett, near Amarillo, cleaned out, swabs over 800 bbls. of oil different from other high gravity in North Texas Field. Panhandle Refining Co.'s No. 12 Gray-Hightower, Eastland County, 400-bbl. completion. Sloan Co.'s No. 2 Smart, Mitchell County, pumping 200 bbls.

FORT WORTH, Tex., March 17.—for the first time in several months all but one of the producing pools in the North Central Texas Field reported substantial increases in production for the past seven days compared with the previous week's showing. Wildcat pools (charged to the inclement weather) failed by 55 bbls. daily to equal the previous week's production. The Iowa Park district which is credited with the production from Archer County made an increase of 2,975 bbls. daily. Burkburnett gained 1,275, Electra 630, Stephens County 245 and Eastland County 230 bbls. daily, with a total reported production of 116,785 bbls. as against 111,485 bbls. daily for the previous week an increase for the field of 5,300 bbls. daily. The increase in production is credited to the large number of producing completions reported during the past seven days and the initial flow from a few semi-completed tests that are not yet classified as completions in the field reports.

With $2 a barrel being paid for 80 per cent of the crude produced and substantial premiums demanded and paid in the Wichita Falls district for a part of the production the operators are more optimistic and see greater money making possibilities ahead for them than they have at any time during the past 24 months, in the North Central Texas Field. A "hurry up" condition is prevalent in every section of the semi-shallow fields and is extending into the deep production territory to the south in Eastland and Stephens Counties. More new tests were spudded the past 15 days in this deep lime section than for the same length period of time in the past two years.

Eastland County Gusher

Of especial interest during the week was the completion of the Panhandle Refining Co.'s No. 12 Gray-Hightower for 400 bbls. at a depth of 1,210 feet, this well being the twenty-fifth producer completed in that shallow pool.

A remarkable feature in connection with the new gusher is that there is production within 300 feet of it on the north, south and west. With the surrounding wells showing only 75 and 100 bbls. at completion.

Jerome McLester's No. 2 Westmoreland in the Gorman Field is a 20-bbl. well at 2,850 feet. Kirk & Brewer's No. 2 Chapman was shot with 20 quarts several days ago, but has not been cleaned out. It has five feet of oil in the hole. Knox & Lewis will complete their No. 3 Wright within the next few days. Kirk & Brewer are drilling the No. 3 Shugart at 1,240 feet.

An increase in new development is promised in the carbon shallow field southeast of Eastland. Contemplated activities are that Clayton and others will drill soon on the Poe farm, a quarter of a mile north of the Gilbert wells. Other tracts in this section which will be drilled in the immediate future include the Neal lease, adjoining the Gilbert on the northeast, the J. L. Rhyne tract, three-quarters of a mile northwest of the Gilbert; the Edmondson farm one-half mile west of the Gilbert, and the Gus Dover lease, just north of the Edmondson.

In the Pioneer, Cross Plains district, there have been no outstanding features since the completion of Moore and others' No. 2 Ackers for a 400-bbl. initial producer. Moore and others are building a rig on a State land lease southeast of Cross Plains. The new rig is a close up offset on the west to the drilling well of the Pennant Oil & Gas Co. and Pope & Wilson on the West Bryson tract and is the only new rig reported in that section during the week.

In the Cross Plains community Gillett & Dozier and others' No. 3 Prater, completed in January, is said to be the best producer drilled on that lease, having so far shown no tendency to decrease from its initial production of 60 bbls. from the 1,300-foot sand and continues to flow natural. The owners are now planning an extensive drilling campaign in the near future that will include the drilling of at least 10 wells on its Cross Cut properties during the spring and summer months.

Mitchell and Crockett Counties

Development reported in widely scattered sections to the west of Stephens and Eastland Counties, is the semi-completion in Mitchell County of the Sloan Oil Co.'s No. 2 Smart which is pumping 200 bbls. below 3,000 feet.

In the Reagan County territory the Big Lake Oil Co.'s No. 2 University is being drilled a little deeper. South of the Reagan County Pool in Crockett County the test of interest is the Crockett Drilling Syndicate's No. 1 Shannon, which has reset the 8-inch casing and will resume drilling at 2,300 feet. This test is being watched closely by all the operators, as it is believed to be located on the apex of the Sheffield terrace and should it be a producer, will mean the opening of a new pool, as it is 15 miles south and east of the Reagan County producers.

A report from Mineral Wells, Palo Pinto County, credits the Texas Pacific Coal & Oil Co.'s No. 7 Robinson, 20 miles southwest of Mineral Wells, as semi-completed and showing 200 bbls. at 1,504 feet. A number of locations are being made in the vicinity of the well and local operators declare that a 200-bbl. production at this shallow depth will result in a large drilling campaign in that district.

Upham and others' No. 1 Watson is a 1,500,000-foot gas producer, about 15 miles north of Strawn, at a depth of 3,740 feet.

This is the deepest test for several miles around, being about 4½ miles from the Hart Pool.

Archer County

There were 22 completions reported from Archer County, 10 being listed dry and abandoned. The largest producer was the Texhoma Oil & Refining Co.'s No. 1-C Wilson, showing initial 325 bbls at 1,600 feet, several others were reported showing in excess of 200 bbls. Around a dozen semi-completions are showing better than 200 bbls. each. Some are rated as flowing and swabbing in excess of 500 bbls. each daily.

Development is being rushed in Archer County with many changes each week not only in the wildcat territory but in the settled pools. Each week finds new sands discovered and new producers completed that extend decidedly the present producing areas. An important wildcat test that promises great possibilities is Bourdon and others' No. 1 Thompson, about 1¾ miles to the northwest of the Chenault and Lea producers and north of the Peterson Pool, which would mean the extension of of the Wilmot Pool that distance to the northwest. The top of the pay was picked up at 1,584 feet, casing has been set and the well is showing considerable oil.

Another promise for a 2½-mile northeast extension to the Freeman-Hampton sand is proving a certainty by the showing being made in the Texhoma Oil & Refining Co.'s wildcat test on Block 63, Section 2, No. 1 Kemp & Kempner, just south of the north line of Archer County. The test encountered a rich looking pay at 1,448 feet, which was drilled to 1,492 feet, casing was set and the bailing of the sand showed an estimated production of 200 bbls. Many other tests have been drilled in that vicinity, but they all missed the pay.

A very promising sand was picked up at 1,433 feet in the Herbert Oil Co.'s No. 1 Blewett. Casing was set on top of the sand, but the seat was lost just as bailing started and it will be necessary to pull the casing and reset. A producer at that point would mean a 3-mile extension of the Swastika Pool.

Wichita County

This section of the field is gradually regaining its old development stride which to date has resulted in many new tests being started and locations in proven and wildcat territory are being made with daily regularity. Especially is this the case in the districts to the southwest of Electra and on the tracts adjacent to Hill & Roberts' No. 1 Overby to the southwest of Iowa Park, where nine new tests will start drilling inside 15 days.

In the extreme south part of the county in the Beaver Creek district several tests are drilling and interesting developments are looked for at any time.

The Shappell Pool has lost its first importance but several tests are drilling in that immediate territory and it is credited with a completion of more each week although none shows for a large flush production.

In the proven areas south of Electra many wells are drilling on the Waggoner and Burnett lands. One well was finished by The Texas Co., No. 288 Waggoner, making 200 bbls. from the 1,600-foot pay. The same company's No. 286, which promised a producer in the 1,900-foot pay, developed casing trouble and was abandoned. The locations for Nos. 290 and 291 W. T. Waggoner have been made.

Amarillo Surprise

The largest completion reported from the Burkburnett-Hirschi district was the Pigg Oil Co.'s No. 21 Hirschi for 25 bbls. at 1,885 feet. In the Shappell Pool, the Shappell Oil Co's No. 5 Jackson is showing 175 bbls. at 1,810 feet. The sensation of the week for the entire field was the performance of The Texas Co.'s No. 1 Burnett, located around 20 miles northeast of Amarillo in Carson County. The well was completed or rather drilled into an oil bearing formation in November, 1922; there being no pipe line or storage available to handle its production, the well was capped and left standing. At completion it was estimated by experienced operators to be good for from 100 to 400 bbls. daily production. Four other tests have penetrated the same depth pay during the past 12 months; all are oil and gas producers. The Texas Co.'s executives have always insisted their No. 1 Burnett was the largest producer so far drilled and semi-completed in the pool, though they never claimed any definite amount of production for their discovery test. Believing that the present optimistic conditions of the industry warranted further development in that wildcat territory a 55,000-bbl. steel storage tank was erected and completed the latter part of February. The test was then uncapped, agitated and cleaned out thoroughly. It then swabbed in excess of 800 bbls. daily for the first 24 hours. The oil is of a high gravity, tests around 37 Baume. It is different from other high gravity crude produced in the North Texas Field, in that when exposed to a cold temperature, even as high as 50 degrees, it congeals rapidly and to an extent that it will not run readily in a pipe line. After many months of waiting for decisive development The Texas Co.'s No. 1 Burnett proves beyond the shadow of a doubt that oil in paying quantities exists in that region of cactus and mesquite, formerly known as the Great American Desert, now the Panhandle of Texas.

Burkburnett-Hirschi

Completions reported in the Burkburnett-Hirschi Pools are the Pigg Oil Co.'s No. 21 Hirschi, 25 bbls. at 1,885 feet; Robinson Oil Co.'s No. 7 Roller, dry at 1,600 feet; Texhoma Oil & Refining Co.'s No. 1-B Powell, dry at 1,800 feet.

Drilling: Bailey and others' No. 1 Bauerbaum, drilling at 1,800 feet; Burk Cameron Oil Co.'s No. 8 Foster, drilling in a dry sand at 1,895 feet; Calendar & Co.'s No. 1 Hobson, drilling a water sand at 940 feet; Fisher Brothers Drilling Co.'s No. 1 Clark, drilling in brown shale at 1,105 feet; Gulf Production Co.'s No. 17 Dale, drilling in rock at 1,755 feet; Hunter and others' No. 1 Woodward, drilling at 1,635 feet; Harrell and others' No. 1 Barwise, at 845 feet; Kellogg and others' No. 1 Overby, drilling at 1,355 feet; Lewis and others' No. 2 George, shut down for a cable tool rig at 2,575 feet; Magnolia Petroleum Co.'s No. 22 Holcomb, underreaming 8¼-inch casing at 1,300 feet; Pigg Oil Co.'s No. 22 Hirschi, rigging to pump and test an oil sand at 1,890 feet; Richardson and others' No. 1 Case, drill pipe stuck, topped an oil sand at 1,730 feet; Tidwell and others' No. 1 Dale, drilling at 1,235 feet; Griffith Production Co.'s No. 6 Roller, drilling in shale at 1,200 feet.

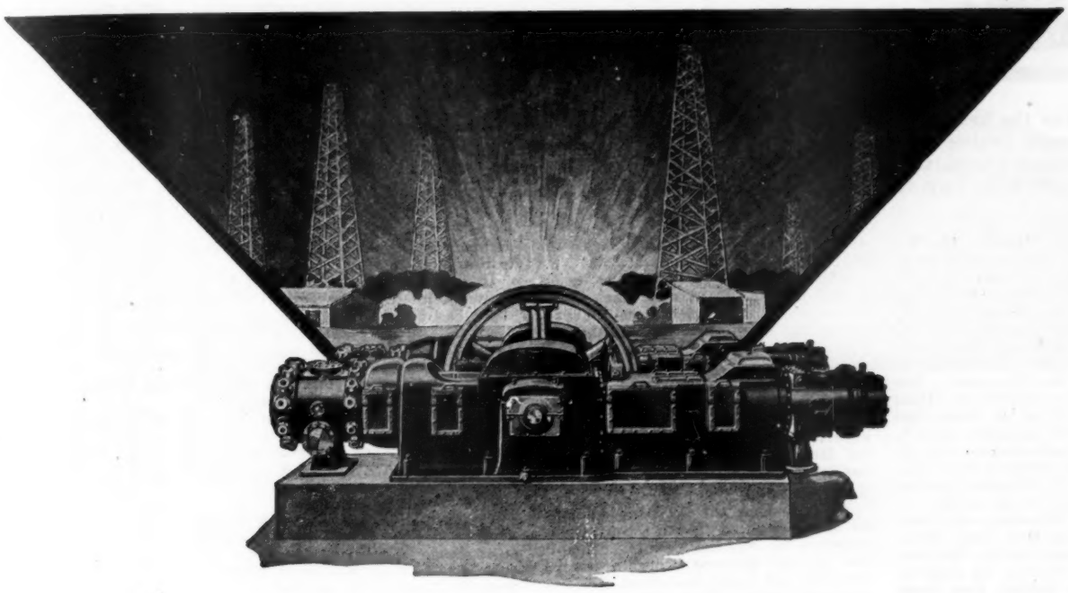
Wichita County Completions

Completions: The Texas Co.'s No. 286 Waggoner, dry at 1,982 feet; same company's No. 288 Waggoner, 200 bbls. at 1,630 feet; Magnolia Petroleum Co.'s No. 8 Allen, 6 bbls. at 1,780 feet; Moran and others' No. 2 Honaker, dry at 930 feet; Gulf Production Co.'s No. 1 Miller, dry at 1,810 feet; same company's No. 9 Jennings, dry at 1,000 feet; Magnolia Petroleum Co.'s No. 6-B Waggoner, 15 bbls. at 1,460 feet; McCarty and others' No. 1 Parker, dry at 1,627 feet; Tarver Oil Co.'s No. 1 Daume, dry at 1,995 feet; Panhandle Refining Co.'s No. 2 Jackson, 110 bbls. at 1,810 feet; Shappell and others' No. 5 Jackson, 175 bbls. at 1,810 feet.

Wichita Drilling

Drilling: The Texas Co.'s No. 290 Waggoner, drilling in blue shale at 220 feet; Black Cat Oil Co.'s No. 5-B Waggoner, drilling in soft rock at 1,340 feet; Camp Oil & Gas Co.'s No. 7-B Douglas

(Continued on Page 134)



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BESSEMER OIL FIELD ENGINES – COMPRESSORS VACUUM PUMPS – ROLLER PUMPING POWERS

Wyoming Field Operations

By F. B. Taylor

For the first time in more than a year Salt Creek falls below 100,000-bbl. mark. Prairie Oil & Gas incorporated in Wyoming takes over Bair and Kasoming interests. E. T. Williams Co. brings in a Salt Creek well that makes 2,000 bbls. Two tests going down in Craig, Colo., Field, by The Texas Co.

CASPER, Wyo., March 15.—The Prairie Oil & Gas Co. has been incorporated in Wyoming to take over the interests of the Bair Oil Co. and Kasoming Oil Co. and to operate in the Northwest as the directing firm of the Prairie Oil & Gas Co. of Kansas. The Prairie of Wyoming is incorporated for $25,000,000, with offices in Cheyenne. The board of directors and officers are: Dana H. Kelsey, president; A. G. Dana, vice president and general manager; John L. Havice, secretary and treasurer; O. E. Garretson, assistant secretary and treasurer and George E. Brimmer, general counsel and a member of the board.

The Prairie of Wyoming will start with holdings in the Salt Creek Field, Bell Springs in Carbon County, Mahoney Dome in the Lost Soldier, the Bair interests in the Lost Soldier, Enos Creek where the Producers & Refiners found gas last fall, Simpson Ridge in Carbon County and Clay Basin in Utah besides many wildcat prospective holdings scattered over this region. The new firm is now preparing to send out scouts and geological parties in an intensive search for new territory and besides entering the operating end of the oil business, the firm will also enter the market as a buyer of petroleum in any field of the Rocky Mountain region.

The merger of the Bair, Kasoming and Producers & Refiners under one directing firm places the Prairie of Wyoming at its birth among the larger operating firms of this region. With the large refinery at Parco of the Producers & Refiners, the demand for refined products can be taken care of and with the production coming from the holdings in Salt Creek and the Lost Soldier district, the crude supply will carry the firm until further operating develop more oil.

Regarding the matter of the gasoline content from wells in the Salt Creek Field of this firm, the officials stated that at present there were no plans made to build a gasoline extraction plant, but plans were under way to have the gas from the wells of the Prairie holdings treated in other gasoline plants in the field under contract with other firms.

The Prairie of Wyoming completes a quartet of large oil firms in this region, the Midwest, Ohio, Mutual and Prairie and these four are already being referred to as the Big Four of this region.

Roads Almost Impassable

The roads are almost impassable in some fields. Grass Creek in the Big Horn Basin is now routing its mail through Kirby instead of Thermopolis and Elk Basin Field travel is down to the bare minimum that will keep the field supplied with foodstuffs. Salt Creek road is good to the end of the paving but from that point to the field is in bad shape and the road to Rawlins and the Lost Soldier Field through Whisky Gap is impassable with the part up Alcova Mountain very bad from washouts. The Greasewood flats up on the Alcova Plateau beyond Sanford's ranch and before reaching the Dumbell ranch, are very soft and no car or truck can cross until the mud dries.

The Oil Weiss Syndicate drilling a wildcat about 4 miles southwest of Thermopolis on the Shelburne Dome, is down 400 feet with the hole and in the red shales.

The Mutual Oil Co. is moving its offices from the First National Bank Building in Denver to the Patterson Building, where the Continental Oil Co. has its offices.

The Southwestern Petroleum Co., drilling on the Medicine Bow Dome in Carbon County is 4,600 feet deep and has not reached the Muddy sand. The hole appears to have reached the point where the Muddy sand should come in but it has failed to show up. Drilling is being continued.

The Columbus Oil Co. is spudding in its first test on the North Casper Creek structure in Natrona County. This is the field the Midwest drilled a test on last fall and found gas about 900 feet and shut down. There are to be four other wells drilled this season.

The Utah Oil & Refining Co. is drilling at 380 feet on its test on the Hughes lease in the Lost Soldier Field. This lease had a large well last year and the Utah firm took over the property on an operating contract.

P. & R. New Mexico Find

The Producers & Refiners found production in its well on the Rattlesnake Dome on the Navajo Indian reservation in New Mexico. The crude is a high-grade oil with a large proportion of gasoline and very like the crude from the wells of the Midwest Refining Co. drilled in that district.

Salt Creek 2,000-Bbl. Well

The E. T. Williams Oil Co. on Section 19-39-78 in the Salt Creek Field, Wyoming, brought in one of the best wells drilled in Salt Creek lately. This well found the second Wall Creek sand at 2,340 feet and production then was shot and increased its flow to 1,500 bbls. Later the hole was drilled somewhat deeper and the production rose to 2,000 bbls. daily and is holding up at that figure.

The Marine Oil Co. on Section 8-39-78, Salt Creek Field, is running tubing in No. 1 well completed last week and will start production as soon as the pipe is in. No. 3 well on the same section is drilling at 2,420 feet and is through the first Wall Creek sand.

The Marine is putting up two steel rigs on Section 20-39-78 for two new wells on this section. These will be the Nos. 5 and 6 on what is termed the Taylor lease.

On the Sheldon Dome in Fremont County, the Marine Oil Co. is down 3,435 feet in the second well and using oil and gas from the first well for fuel to drill with. This second test should be in the lower Frontier sands in the near future. It is located on Section 8-5-2w.

In the Baxter Basin Field in Sweetwater County, the Midwest Refining Co. is drilling at 3,350 feet on Section 11-17-114 and should reach the Dakota formation in the near future. This will be the first well to make a test of the sands under the gas producing horizon, in the Baxter Basin Field.

The same company is getting ready to start drilling on the wildcat well on the Hiawatha Dome south of the Baxter Basin about 40 miles. This operation is on the Colorado-Wyoming State line and nothing has ever been drilled in that territory.

In Colorado the Craig district is the center of interest, The Texas Co.'s well there has been drilled into the sand about 24 feet and responded with a production that is estimated at over 4,000 bbls. daily. The well is now shut in and The Texas Co. is preparing to drill two more at once. Nothing has been given out regarding the destination of this oil, but the operators consider that it will likely go to Rawlins by pipe line to connect there with the Producers & Refiners line that reaches all central Wyoming refining points.

The Ohio Oil Co. is preparing to drill a wildcat north of Boulder on the Haystack Dome and the Midwest will put down a test on the Illes Dome which lies near The Texas Co.'s territory at Craig. This last test will be a deep hole also. The Midwest is also preparing to drill a test on the Berthoud Dome and will have to go about 4,500 feet to reach the Dakota formation. The Transcontinental Oil Co. is to start a well on the Beaver Dome near The Texas Co.'s discovery in the Craig district.

The Producers & Refiners opened a new entertainment hall for residents of Parco, the town of the Producers & Refiners at the refinery in Carbon County. This new hall is a model of its kind and is built to afford pleasureable entertainment for the Parco workers of the Producers and Refiners.

Montana Operations

Sunburst Field reported a good producer for the Security Oil Co. Ltd., a Canadian corporation, drilling on the SW, Section 30-35-1w, near the central part of the field. This well found the Sunburst sand at 1,225 feet and an estimated production of 25 bbls. The well is being drilled down to the Ellis sand expected at 1,500 feet and will carry an open hole so that both sands can be produced through the same casing if the Ellis is found productive. The wall between the Sunburst and Ellis sands stands up well and this plan has been used in many wells in the field. The Sunburst sand produces an excellent grade of crude, but the Ellis sand oil contains some sulphur.

The Illinois Pipe Line Co. is laying a line to the leases of the Bitter Creek and Sylvester oil companies on Section 29-35-1w to take care of the production and tanked crude. At present there is about 3,000 bbls. of oil in the tanks and three producers with another well starting drilling. This property was formerly owned by the Sunburst Oil & Refining but this firm has sub-leased to the above companies.

Gordon Campbell, who discovered the Sunburst Field, brought a party of capitalists to the field the past week and inspected the Campbell properties and the adjoining leases.

Cat Creek Field

During the past year, Cat Creek Field shipped out to various markets a total of 1,976,865 bbls. of crude which had a market value of a little more than $3,000,000. Most of this crude was shipped eastward to refining points in the Middle West and a large portion to the Whiting, Ind., refinery of the Standard of Indiana.

The Mutual Oil Co. which recently merged with the Continental Oil Co., controls the Cat Creek Field and is preparing for an extensive development campaign over Montana the coming summer. At the same time the Mid-Northern Oil Co. which is the Montana operating firm of the Midwest Refining Co. is also preparing for extensive work by its geological and scouting organization. The Ohio Oil Co. has already started its scouts at various places.

The Montana Railroad Commission's report on the Cat Creek Field for January showed a production of 144,428 bbls. or about 5,000 bbls. daily average. Of this amount, 98,172 bbls. went out as production of the Mutual Oil Co. and 46,255 bbls. went out as shipments from other firms in that field.

The shipments from Winnett, the rail point, were as follows: the Standard Oil Co. of Indiana took 63,006 bbls. to Whiting, Ind.; the Mutual Oil Co. sent 18,[illegible] bbls. to its refinery at Cowley, Wyo.; the Arro Oil & Refining Co. at Lewistown, Mont., received 25,710 bbls.; the Moulton Oil & Refining Co. at Minneapolis received 3,626 bbls.; the Hart refinery at Hedgesville, Mont., received [illegible] bbls.; the Standard of Indiana at Whiting received 12,381 bbls.; the Lewistown Oil & Refining Co. received 19,672 bbls.; the Pure Oil Co. at Minneapolis received 1,704 bbls.; the North Star refinery at Minneapolis received 1,914 bbls.; the Yale Oil & Refining Co. received 5,2[illegible] bbls. at Miles City, Mont.; and the Weowna refinery at Winnett received 5,691 bbls.

The Mutual Oil Co. had in storage for itself at the end of January, 250,[illegible] bbls. and for others was tanking 12,[illegible] bbls. and the gross income for the month for the pipe line was $9,407.21.

At present the Chicago, Milwaukee and St. Paul Railroad is taking an average of three trains per day out of Winnett and is considering placing another train in operation to handle the traffic. The crude is now going to the Utah Oil & Refining Co. in the main, for refining at the Salt Lake City refinery of that corporation.

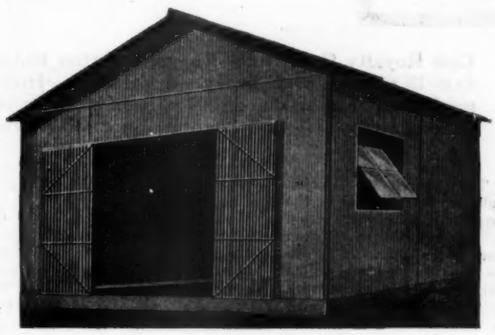
Field Runs

Salt Creek fell off the past week to the low mark of 97,800 bbls. due to weather conditions. This is the first time for more than a year that Salt Creek has dropped under 100,000 bbls. daily. The runs from the different fields of the Rocky Mountain region are:

Salt Creek	97,[illegible]
Teapot	1,[illegible]
Big Muddy	1,[illegible]
Grass Creek	1,[illegible]
Elk Basin	1,[illegible]
Greybull	[illegible]
Rock River	3,[illegible]
Lance Creek	2,[illegible]
Poison Spider	[illegible]
Osage	[illegible]
Hamilton Dome	[illegible]
Lander	[illegible]
Pilot Butte	[illegible]
Lost Soldier	2,[illegible]
Ferris	[illegible]
Cat Creek	4,[illegible]
Sunburst	[illegible]
Miscellaneous	[illegible]
Total	126,[illegible]

TO BE MANAGER AT BLUEFIELD

C. E. Reese, gas and electrical engineer, has been appointed general manager of the Bluefield Gas & Electric Power Co., Bluefield, W. Va., by Walter Whetsell, president of the Southern Gas & Power Corp. This is a Sanderson & Porter property. Mr. Reese has been connected with the Westinghouse Electric & Manufacturing Co., as section head, state sales and publicity department, Philadelphia, Pa. He has been actively engaged in the Stoker Manufacturers Association as secretary of the publicity committee and chairman of the advertising sub-committee. He is an associate member of the American Institute of Electrical Engineers, member American Gas Association, formerly combustion engineer with Henry L. Doherty & Co., New York City; assistant engineer with the Illinois Public Utilities Commission working in Illinois field and Chicago, and later associate editor of the Gas Age and Gas Age Record and editor of the Gas Engineering & Appliance Catualog of New York City.



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Gulf Coast Oil Operations

By P. L McGreal

Gulf Royalty Co.'s No. 1 Boggs, Stratton Ridge Dome, makes 250 bbls. in first 15 minutes with heavy gas pressure. Hull Pool completes two 50-bbl. producers. Luling one of 500 bbls. in old district. Wildcat at Wharton abandoned as dry. New production about offsets decline in old wells in field.

HOUSTON, Tex., March 17.—During the week 13 wells were completed in the Coastal pools with an initial production of 1,915 bbls., which little more than offset the decline in the old wells. Five dry holes were recorded. Four bailed salt water. At the end of the week seven tests were bailing.

Five of the completions are in the Orange Pool as is 1,340 bbls. of the total new output. Three deep holes were abandoned there. In the Hull Pool, two wells were finished with but 50 bbls. new output. Two pumpers were completed in the Goose Creek Pool. One bailed salt water at 5,000 feet and another was abandoned as a salt water hole at 4,700 feet. One well is bailing.

The Luling Field shows one completion, a 500-bbl. well in the old district.

The Gulf Royalty Co.'s No. 1 Boggs on the northeast side of the Stratton Ridge Dome, started flowing Saturday morning after 4½-inch strainer had been set with 6-inch casing to the bottom of the hole at 4,250 feet. The well made 250 bbls. during the first 15 minutes with a heavy gas pressure. It shows 30 gravity. Stratton Ridge is a semi-pool, southeast of Angleton, the county seat of Brazoria County. It has been the scene of exploration work for the past 14 years. Several wells have been developed on the northeast side, but they soon sanded. The oil from the well on the Boggs is being run into earthen storage provided by the Freeport Sulphur Co., which is drilling two tests on the same side of the dome.

In the Humble Pool, the Invincible Oil Co. has started No. 71 Hermann & Martin & Czereaux No. 14 Hirsch. The Gulf Production Co. is starting Nos. 7 Rucker and 9 Galliard in the Goose Creek Pool. In the Sour Lake Pool, the Gulf Co. is rigging No. 56 Hardin and the Stephens Oil Co. No. 5 Fee.

The Texas Co. is leasing acreage from 2½ to 3 miles west of the old Batson Pool in Hardin County.

A wildcat test was abandoned at 450 feet in gyp on the new Wharton Dome in Wharton County.

Little Change in Field

Very little change is noted in any of the fields. Operators complain that the high prices for material are a deterrent factor in starting new work and the major companies do not wish to disturb the market with big wells, which may be developed at any time in either the Orange or Hull pools. The stocks of A and B grades in steel and earthen storage will show a slight decrease at the close of March, provided the present conditions are maintained in the pools. It does not take long for a few big wells to accumulate a surplus in the stocks above ground.

A greater amount of crude that grades as B is produced than the average operator imagines. In the Goose Creek Pool, for illustration, during the first half of February, the runs of one pipe line company averaged 4,889 bbls. per day, of which 2,827 bbls. graded as A and 2,062 bbls. as B. The runs of another line averaged 6,868 bbls. during the same period, of which only 899 bbls. graded as A and 5,969 bbls. as B. The total runs of the three lines in that pool averaged 12,244 bbls., 4,213 bbls. grading as A and 8,031 bbls. as B.

Practically the same ratio exists in the Hull Pool, where the daily average runs for the first half of February aggregated 25,414 bbls., 11,980 grading as A and 13,434 bbls. as B.

The Gulf, Humble and Sun Pipe Line companies graded Gulf Coast crudes last June, but the Texas Pipe Line Co. has never made any distinction. At present grade A commands $1.65 per bbl. and grade B $1.40. The lines define grade A as follows:

Viscosity—Not less than 100 seconds at 100 degrees Fahrenheit-Saybold.

Sulphur—Not over 4 per cent.

Cold Test—Of distillates having viscosity of 1,000 seconds at 100 degrees Fahrenheit shall not be over 5 degrees F. A. S. T. M. method.

B grade embraces all coastal crudes which does not meet the tests for A grade.

The use of gravity and Fahrenheit tests in all the fields, whether light or heavy gravity crudes, means in effect that the refinery departments of the major companies dominate and specify the requirements for the pipe lines and buying agencies. In the old days the pipe lines and buying agencies made the quotations on crudes, based on the law of supply and demand and the refineries accepted the crude without distinctions.

In the Gulf Coast region grade A is the most acceptable for the making of lubricating stocks, hence the premium over the lower grade.

Daily Production

The gross daily average production in the Gulf Coast pools and the southwest district fields the during week is placed at 114,365 bbls. The Callihan district is credited with a potential of 2,100 bbls. in addition.

The estimate for each district is as follows:

District—	Bbls.
Batson	1,210
Blue Ridge	640
Barber Hill	240
Dayton	95
Damon Mound	1,640
Edgerly (La.)	590
Goose Creek	13,670
Humble	5,150
Hull	25,865
Jennings (La.)	525
Markham	100
Orange	10,700
Pierce Junction	620
Spindletop	865
Saratoga	1,475
Sour Lake	4,820
Somerset and Piedras Pintas	2,650
Vinton (La.)	5,470
Welsh and Anse La Bute	90
West Columbia	13,245
Luling	21,000
*Miscellaneous	3,705
Total	114,365

*Includes Laredo districts, Milam County, Nacogdoches, Big Creek, Big Hill, High Island, Stratton Ridge, New Iberia (La.)

Operations in the Pools

In the Orange Pool, the Brownie Babbittee Oil Co.'s No. 1 Brown in the new southeast extension, came in at 4,575 feet, flowing 1,000 bbls. of fluid, 10 per cent water. The Orange Petroleum Co.'s No. 1 Chesson, a work over, bailed dry at 3,400 feet. The Humble Oil & Refining Co.'s No. 20-B Chesson will make a pumper at 3,900 feet. The Supreme Oil Co.'s No. 1 Jackson was abandoned at 4,020 feet after deepening and a location made for No. 2. The Sinclair Oil and Gas Co.'s No. 6 Granger, deepened to 4,750 feet was abandoned as a failure. The Orange Production Co.'s No. 1 Gum Island, 2½ miles east of the pool, bailed salt water at 2,550 feet and will be drilled deeper.

In the southeast extension, the Sun Oil Co.'s No. 3 Brown is drilling below 4,550 feet and No. 4 at 4,067 feet. The Gulf Production Co.'s No. 4 Pevito is below 3,980 feet and No. 6 at 356 feet. This company has a deep test in No. 13 Hager Fee on the east side of Cow Bayou that is making a record for depth, drilling now below 5,450 feet. No. 12 Hager Fee is around 3,600 feet. On State land on the banks of Cow Bayou, the Rycade Oil Corp.'s No. 1-E is below 4,124 feet and No. 3-A at 4,530 feet and fishing. The Andrews-Cameron Co.'s No. 1 State land is at 2,720 feet and sidetracking. On the south end of the pool, the Gulf Co.'s No. 1 Hammam-Consolidated is around 4,165 feet.

On the northwest side of the pool, the McClain and others No. 1 Williams is at 2,810 feet. The Kishi Development Co.'s No. 5-E Kishi is shut down. The Rycade Co.'s No. 2 Kishi is fishing at 3,925 feet and No. 4 is drilling around 1,700 feet. The Gulf Co.'s No. 7-A Kishi-Lang is below 2,310 feet. On the west side, the Pilot Oil Co.'s No. 1 Aronson is below 3,675 feet. On the north side, the Mutual Oil Co.'s No. 8 Chesson is working over and No. 9 is rigging to work over. On the northeast side, the Sun Oil Co.'s No. 1 Kato is drilling below 4,830 feet. The American National Oil Co.'s No. 1 Winifree, 1 mile north and east, is drilling around 4,235 feet.

In the old part of the pool, the Edgerly Petroleum Co.'s No. 4 Carbello is working over and No. 6 is drilling at 3,500 feet. The Orange Petroleum Co. is rigging to work over No. 4 Winifree and is deepening No. 4 Chesson. The Kishi Development Co.'s No. 2 Smith-Foreman is drilling at 2,900 feet. The Gulf Co. is working over No. 7 O. Chesson and 7-A Winifree Fee.

Hull Pool—Liberty County

The Yount-Lee Oil Co.'s No. 8 Merchant on the north side of the Hull Pool is pumping 50 bbls. at 3,220 feet. Same company's No. 4 Taylor is a salt water hole at 4,980 feet on the northwest side. The Link Oil Co.'s No. 2 Pevito is bailing at 3,850 feet. The Humble Oil & Refining Co.'s No. 1 Sterling quit flowing and will be rigged to pump. It came in two weeks ago, estimated at 12,000 bbls., but dropped to 2,600 bbls. last week and then ceased to flow during the week. It is farther out from the dome than any of the wells on the new northwest side of the pool. Screen was set in 16 feet of sand at 4,600 feet. The Humble Oil & Refining Co. got a salt water well in No. 3 Hankmer at 2,600 feet, after working it over. It is on the northeast side. On the east, the Republic Production Co.'s No. 79 Dolbear lease, operated jointly with the Houston Oil Co. is bailing at 2,620 feet. The Gulf Co. is bailing No. 1 Thomas on the southeast side at 2,940 feet. It is a worked over hole.

On the north side, the Yount-Lee Oil Co.'s No. 9 Merchant is rigging. On the northwest, the Empire Gas and Fuel Co.'s No. 3 Lynd is at 4,150 feet. The Gulf Co.'s No. 6 Harrison Fee is at 1,450 feet. No. 7 is rigging. The Humble Oil & Refining Co.'s No. 5 Marshall is at 875 feet. The Houston Production Co.'s No. 2 Taylor is below 2,124 feet. The Link Oil Co.'s No. 3 Pevito is at 1,235 feet with a derrick standing for No. 5. The Monarch Oil & Refining Co.'s No. 2 Miller is shut down at 4,350 feet and No. 3 Miller is at 3,760 feet, sidetracking. A derrick is up for No. 4. The Yount-Lee Oil Co.'s No. 6 Taylor is drilling at 3,235 feet. F. L. Thompson is rigging No. 3 Ray. On the west side, the Gulf Co.'s No. 12 Hannah Fee is at 4,335 feet and No. 13 below 1,340 feet. No. 14 is at 435 feet. On the southwest, the Texas and Vacuum Oil Co.'s joint No. 2 Hannah is drilling around 2,145 feet.

In the northeast side, the Gulf Co.'s No. 19 Morris-Phillips is working over. On the east side, the Republic Production Co.'s No. 23 and No. 57 Dolbear are working over. No. 78 is drilling below 3,585 feet. The largest production in the pool is on this Dolbear 800 acres, the runs for the first half of February averaging 6,584 bbls. per day of Grade A and 8,602 bbls. of Grade B. To the southeast, the Gulf Co.'s No. 9 Phoenix is shut down. No. 18, is working over. No. 35 is rigging to deepen. No. 38 is drilling below 2,900 feet and No. 39 around 1,635 feet with a location for No. 40. Its No. 7 Thomas is rigging to drill deeper. On the south side of the dome, the Sun Oil Co.'s No. 1 Carr is drilling deeper at 1,635 feet.

Hardin County Pools

At Batson, the Ada Bell Oil Co.'s No. 68 Honeymoon is a 15-bbl. well at 372 feet. No. 69 is rigging to start. The Gulf Production Co.'s No. 3 Christina bailed salt water at 1,720 feet. The Reliance Oil Co.'s No. 36 Knight is drilling below 935 feet. The Acorn Oil Co. has a derrick up for No. 48 Paraffine.

In the Saratoga Pool, the Rio Bravo Oil Co.'s No. 83-B is reaming at 1,910 feet. The Gulf Production Co. has a location for No. 1 M. B. Teel. The Texas Co. and Vacuum Oil Cos. have locations on the south side of the pool. The Pugh Bros. Oil Co.'s No. 3 Lewis is pumping salt water at 1,750 feet.

In the Sour Lake Pool, the Gulf Production Co.'s No. 57 Hardin is drilling deeper. The Lake View Oil Co.'s No. 3 Minor is below 1,450 feet. The Star Oil Co.'s No. 1 Lynn is shut down.

Harris County Pools

At Goose Creek, the Humble Oil & Refining Co. is rigging No. 55 Smith and No. 28 Sweet. Derricks are up for Nos. 27 Peninsula and No. 33 Schilling. A location has been made for No. 40 on the Galliard 25 acres. The Gulf Production Co. has a derrick for No. 7 Chapman-Bryan, near the mouth of the creek. The Hisgen Petroleum Co. is rigging No. 2 Busch, north of the production. The J. R. Copeland Oil Co. is rigging to start No. 2 on Spillman in the bay across from the pool.

The Gulf Coast and Crown joint No. 19 Galliard, a work over, is pumping 200 bbls. at 2,780 feet. Their No. 21 is bailing at 2,880 feet. The Sun Oil Co.'s No. 16 Bartlett-Smith is pumping 200 bbls. at 2,520 feet. The Gulf Production Co. abandoned two usually deep holes, even for that pool. No. 2 Hirsch in the bay bailed salt water at 4,700 feet and No. 27 Beaumont showed the same at 5,000 feet.

The Humble Oil & Refining Co.'s No. 3 Harrell is drilling at 2,635 feet and No. 10 Tabb is around 3,655 feet. No. 18 Schilling is working over. No. 31 Smith is below 3,345 feet. The Sun Oil Co.'s No. 17 Bartlett-Smith is drilling at 1,435 feet. The Gulf Production Co.'s No. 12 Paddock is at 1,345 feet. No. 12 Tabb Fee is below 3,250 feet. No. 16-A Tabb is at 2,135 feet. No. 5 Wright is drilling at 545 feet. No. 20-A Wright is around 2,835 feet. No. 1 Bush is deepening. No. 5 State in the bay is drilling at 2,800 feet.

(Continued on Page 136)

Even the Mule Skinners Know!

ONE DAY last month a Mule Skinner who works for the J. E. Crosbie interests in Arkansas, was instructed to go to Smackover for material and hurry back to the drilling well. En route he met the production man from an adjoining lease.

"Smackover?" hailed the production man.

The Skinner nodded.

"How about pickin' up a couple of valves for me?"

"Nothin' doin'. Gotta hurry," replied the Skinner. "Giddup!"

But at that instant the Mule Skinner had an idea.

"Whoa!" he yelled. "Where's them valves at?"

"Frick-Reid's," shouted the production man, hope reviving.

"I'll get 'em," decided the Skinner. "It ain't puttin' me out none—Frick-Reid never makes me wait."

Which seems to indicate that even the Mule Skinners know.

And you get the same sort of SERVICE at every Frick-Reid Store in America. White Men only, versed in the ways of the oil country—willing, eager, capable!

Dreadnaught and other Rotary Equipment—Complete Cable Tool Equipment—Reid Gas Engines and Powers—Donovan Boilers—Roebling Wire Lines—Whitlock Cordage—F-R Electric Light Plants—Axelson Working Barrels and Sucker Rods—National Transit Steam and Power Pumps—Jones and Laughlin Tubular Goods—Ratigan Beam Hangers, Sure Grips, Etc.—Camel Hair Belting—F-R Drilling and Pumping SERVICE Belting—Warren Steam Engines—Johns-Manville Packings—Etc.

The Frick-Reid Supply Co.

Tulsa, Okla. **Pittsburgh, Pa**

West of the Mississippi—Stores Everywhere

In Oil Country Equipment—the most HUMAN organization in America

West Kentucky—Tennessee

By Vern T. Whitney

Combest Oil Corp.'s No. 3 A. Huddleston, Sulphur Creek, Cumberland County, makes 300 bbls. natural. McClintock Oil Co.'s No. 4 Anderson, Kettle Creek, pumping and flowing 150 bbls. naturally with exceptional gas pressure. Tex-Ken Oil Corp. has 25-bbl. producer in Davenport Pool.

BOWLNG GREEN, Ky., March 17.—The posting of a 15-cent advance in crude prices, an increase in the pipe line runs and several good completions throughout the entire district features the week in the western Kentucky Field.

An increase of 13,384.02 bbls. in production for the month of February, compared with the January totals brought the total output of the western Kentucky Field up to 106,283.22 bbls., a daily average of 3,542.77 bbls.

The runs were distributed by counties, showing the increase or decrease, as follows:

County—	Runs	Decrease	Increase
Warren	50,263.72	.....	1,557.50
Allen	40,349.44	.....	6,713.85
Cumberland-Mon.	10,787.39	.....	1,272.35
Hancock-Ohio	6,285.41	.....	3,118.94
Barren	5,276.58	.....	526.38
Simpson	1,455.68	11.45	.....
Hopkins	1,295 00	.....	195.00
Total	106,283.22	11.45	13,384.02

Cumberland Completions

The best well of the week in the Cumberland County Field was the Combest Oil Corp.'s No. 3 A. Huddleston, in the Sulphur Creek district. It was finished at a total depth of 750 feet, in the sand below the Pencil Cave, and reported good for 300 bbls. naturally. Rig is being moved to No. 4 location.

In the Kettle Creek district, the McClintock Oil Co.'s No. 4 Anderson is pumping and flowing 150 bbls. naturally in the first pay. The gas pressure in this Anderson well is much heavier than in any of the previous tests on that farm. On the Scott farm, in the same vicinity, Scott and associates' No. 1 was reported dry and abandoned.

At Big Renox Creek, north of Burkesville in the same district that the "Old American" well was completed in 1829, the Shady Side Oil Co.'s test on the C. Strange farm is dry at approximately 700 feet.

Barren County Development

An effort to extend the new Pitcock Pool, a few miles southwest of Glasgow in Barren County, to the south of its present bounds proved a disappointment as the test on the Steffey farm, drilled by Bowling Green, Ohio, parties was dry at 530 feet, 232 feet below the shale. It was 2 miles south of the Pitcock and 1 mile southwest of the Travis No. 2 is being rigged up 1½ miles north of No. 1. Three miles southwest of Glasgow, Maxey and others got a duster in their No. 7 Childress at 471 feet. After being shot with 40 quarts the casing was pulled and the hole plugged. On the Ritchie, 2½ miles southwest of Glasgow, Sampson, Norris Brothers and Warder's No. 3 made 6 bbls. on jack at 500 feet. In the same district, the Elem Oil & Gas Co. got a 5-bbl. pumper in its No. 1 Redford, west of the Pitcock, at 500 feet. To the east of the Scott farm of Fred Moore, the Houchins Leasehold Co.'s No. 2 Mansfield made a 5-bbl. pumper at 551 feet. It was drilled 185 feet below the shale and shot with 40 quarts, and 145 feet of casing was used.

Lewis J. Emery, Jr. and Sons finished their No. 13 Harston, 10 miles south of Glasgow, at 300 feet. When put on pumping jack the well showed 10 bbls., the first pumping.

In the Coral Hill section, the Bryner Oil Co.'s wildcat on the Peden farm was dry at 535 feet. It was 3 miles north of production.

Southwest district—Ed Allen's No. 1 Toddy was drilling at 300 feet. Carter Oil Co.'s No. 2 Lessenberry, two locations northeast of No. 1, is spudding; Fred Moore's No. 2 Travis was progressing at 120 feet; Maxey & Kopel were spudding No. 5 Childress No. 2 farm; Shriver and associates were making hole at 40 feet in their No. 1 Burris; Kopel's No. 1 Neeley is rigging up; L. J. Emery, Jr. & Sons were starting No. 14 Harston; the Elem Oil & Gas Co. is moving a rig to its No. 9 location on the Warder farm; same company is spudding its No. 2 Redford.

Warren and Allen Counties

Only five completions are reported for the week in Warren and Allen Counties, four of which made producers. However, 13 rigs were moving on locations, 7 in Warren and 6 in Allen. In Warren County the Petroleum Exploration Co. is moving a rig to drill its No. 21 on the Mercer farm; the Tex-Ken Oil Corp. is moving to No. 22 on the Keller place; the Moran Oil & Refining Co. is rigging up to drill No. 16 on the M. M. Ennis farm; the Stafford Oil & Gas Co. the Ruby Consolidated Oil Co. and Independence, Kans., parties have rigs enroute to drill wells in the Rockfield district. In eastern Warren, Toms and others are starting their No. 2 on the Motley farm.

In Allen County, Turner & English are starting No. 7 W. L. Motley; the Wood Oil Co. is rigging up on the J. M. Whitney farm, L. D. Robinson is moving a machine to drill No. 13 on his own farm; the Brazil Oil & Gas Co., the Neil-Hubering interests and Thompson & Keyes are starting new wells.

In the Davenport district of Warren County, the Tex-Ken Oil Corp. completed its twenty-first producing well in its No. 21 C. A. Keller good for 25 bbls. at a total depth of 1,264 feet. The sand from 1,245 to 1,258 feet was treated to a 60-quart shot.

In the Rockfield shallow district, southwest of Bowling Green, the Bohon Development Syndicate got a duster in its No. 4 Bohn, at 425 feet.

In eastern Warren, Toms and associates completed a good well on the Motley farm, in the Willoughby-Sledge district, along the banks of Bays Fork Creek. It was finished at a total depth of 307 feet, 57 feet below the shale, and pumped 15 bbls. naturally.

On the L. S. Buchanan farm, north of Scottsville in Allen County, the White Plains Oil & Gas Co. completed a 25-bbl. pumper in its No. 22 at a total depth of 477 feet. The shale was found from 322 to 367 feet; the sands at 10 feet and 40 feet below the shale were given a 40-quart shot. The well first made nothing but salt water, but continuous pumping got it on oil. Charles Moon, superintendent for the White Plains Co., reports he is moving a rig to No. 14 on the Buchanan farm to drill it to a deeper pay. On the J. T. Johnson farm, in the same locality, Dr. Fletcher got a 10-bbl. pumper in his No. 4 at 378 feet.

Waller-Runner area—E. M. Treat & Co.'s No. 20 Sebe Smith is on top of the pay sand; Wood River Oil Co.'s No. 1 R. Oliver was shut down; Wood Oil Co. is spudding No. 10 Jim Isabel; the Ohio Fuel Oil Co.'s No. 6 Ed Garret was down 450 feet.

Sandidge district—Makeever Brothers No. 15 Anna Shield is waiting on shot; same parties No. 23 Sandidge was spudding at 67 feet; G. C. Foster's No. 2 Wood was on top of sand; his No. 4 C. E. Francis was drilling at 1,000 feet; H. I. Mossbarger's No. 1 Corbon was progressing at 689 feet. One-half mile south of Richardsville, the Farmers Oil & Gas Co.'s No. 1 Bratcher will be completed the first of the week.

Rockfield-Browning sector—The Olive Green Oil Co.'s No. 4 McLemore was drilling at 530 feet; P. H. Lavelle's No. 4 Hutton was down 475 feet; Amfot Oil Corp.'s No. 3 Shanks was making hole at 750 feet; Bolling & Lowman's No. 4 Ben Price was progressing at 650 feet; Rehn & Lowman's No. 6 Gillespie was drilling at 500 feet; Daugherty & House's No. 5 Van Meter was spudding at 50 feet; Herchel's No. 4 Pete-Foster was down 330 feet; J. B. Felty's No. 5 Covington was drilling at 160 feet. In the Davenport Pool, M. B. Williams' No. 4 Jim Hobson was drilling at 236 feet; B. Vondram's No. 9 Johnson was nearing the sand at 950 feet. In eastern Warren, J. T. Williams' No. 2 Hawthorne is in the sand waiting on a shot.

Cumberland County Activity

A survey of the Cumberland County oil fields shows a total of 24 wells either drilling or shut down. So far the Pangon Development Co. has 36 wells connected to its gathering lines in Cumberland and 9 in Monroe County. These are distributed by districts as follows, showing the owners, the farms and number of wells on each.

Bear Creek, McClintock Oil Co., C. C. Smith, 8.
Bear Creek, W. S. Raydure & Co., P. P. Smith, 2.
Bear Creek, E. M. Treat & Co., Ben Riddle, 1.
Bear Creek, E. M. Treat & Co., Dickens 1.
Bear Creek, W. S. Raydure & Co., Lola Keen, 3.
Sulphur Creek, McClintock Oil Co., A. D. Hood, 1.
Sulphur Creek, McClintock Oil Co., G. W. Coop., Jr., 1.
Sulphur Creek, Morris Pet. & Combest Co., A. A. Huddleston, 8.
Sulphur Creek, Kanawha Oil Co., J. B. Groce, 1.
Sulphur Creek, Kanawha Oil Co., G. W. Helms, 1.
Sulphur Creek, W. S. Raydure, John Riddle, 2.
Kettle Creek, W. S. Raydure, Clem Blythe, 1.
Kettle Creek, W. S. Raydure, Minnie Blythe, 1.
Kettle Creek, Petroleum Exp. Co., R. Blythe, 3.
Kettle Creek, Daniel Boone Oil Co., W. T. Blythe, 1.
Kettle Creek, Zook & Bonnell, L. B. Blythe, 1.

Monroe County

Kettle Creek, A. S. McClintock, trustee, Millard Kerr, 4.
Kettle Creek, Daniel Boone Oil Co., Lacy Logan, 3.
Kettle Creek, McClintock Oil Co., J. T. Anderson, 2.

The wells connected in the Bear Creek district average together 137 bbls. daily. In Sulphur Creek district, 6 wells averaged a little better than 73 bbls. In the Kettle Creek district, 13 wells averaged 584 bbls. on March 6. The average of each of the above districts could have

(Continued on Page 140)

East Central Texas

By Staff Correspondent

DALLAS, Texas, March 17.—The most important well in East Central Texas at this time is Pettit & Harlow's No. 1 Cooper on the Cole survey, in Hunt County. The top of the Austin chalk was found at 2,060 feet and it was drilled through at 2,404 feet. The top of the Blossom sand was reached at 2,458 feet and the bottom at 2,474 feet. Eight-inch casing was set at the bottom of the Blossom sand to test out the gas. Thus far this test has accomplished all that could be expected of it. The formations have been found where they were looked for and the completion of the well in the Woodbine is anxiously awaited. Even if it turns out a failure it will not deter others from drilling and it is expected that by late spring there will be a dozen tests going in that territory.

If an oil country is developed in Hunt and the other eastern counties that will be tested this spring, Dallas will be an oil center of prominence, and it is expected here the Magnolia, Sun and other companies now substantially located in Dallas will be joined by some of the prominent organizations which have their North Texas headquarters in cities farther westward.

The production of the Powell Field last week averaged 141,000 bbls. a day. It rose to 157,000 bbls. on one day since the completion of the gusher wells on the western side of the field, but each day last week the output declined.

The latest big well in the newly discovered sand was that of Mills Bennett on the Woolens farm. Smith survey which started off at 350 bbls. an hour.

The Gulf Production Co. deepened its No. 3 Bush on the Smith survey but it failed to show any increase in production at a total depth of 2,969 feet and has been put back on the pump.

The J. K. Hughes Development Co.'s No. 6 Alexander, which was one of the big wells reported last week is making about 60 per cent water.

Geologists say the deeper sand was resulted from a "faulty" condition forming a strata similar to a mound-shaped shelf. A number of new derricks are up on nearby leases and a revival of field work will result in an effort to take part in the rich production in that part of the field.

The Bazette structure north of Powell is promised three tests, the Boyd Oil Co.'s No. 1 Rutherford, which is now a rig; Cranfill & Penn's No. 1 Barnett, on the Simonton survey, rigging up and the Admiral Oil Co. which has made a location on the Skiles land, Johnson survey.

The Gulf Production Co.'s No. 4 Blumrosen, Lane survey, in the northwest end of the field, made a 50-bbl. well at 2,864-73 feet.

The E. S. Smith Oil Co.'s No. 2 Cox, Smith survey, started at 500 bbls. from sand at 2,740-58 feet.

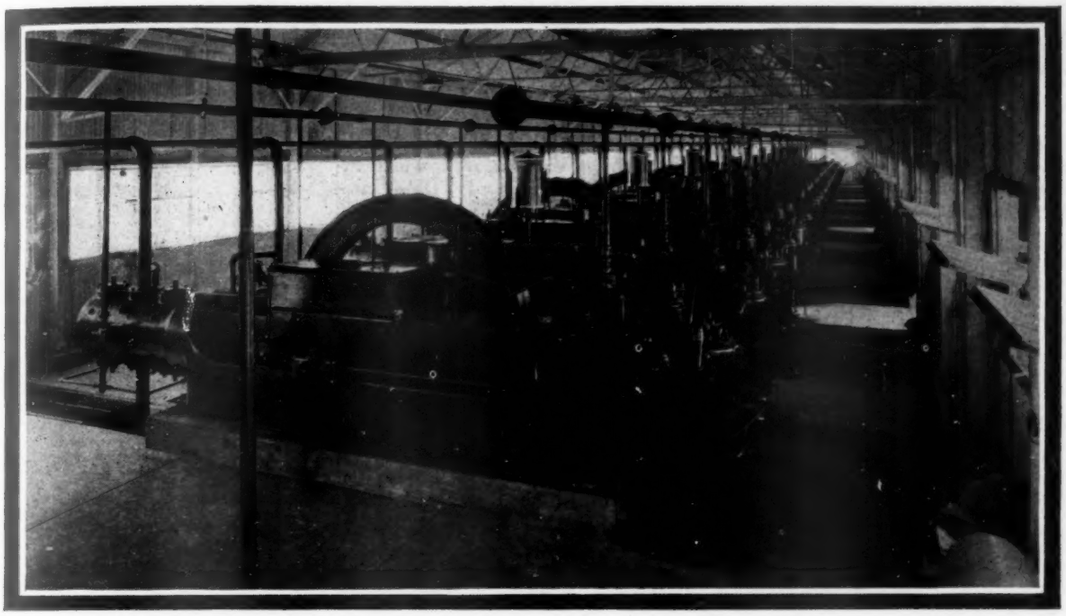
The Skelly Oil Co.'s No. 1-A Ramey, Smith survey, made a 50-bbl. shallow sand producer at 1,612-55 feet.

Upchurch and others abandoned their test on the Fleming 4½ acres, Greer survey, at 2,955 feet.

The Derby Oil Co.'s No. 3 Harvard, Mathews survey, was abandoned at 2,96 feet and No. 4 Harvard was abandoned at the same depth.

The Gulf Production Co.'s No. 1 Crews, Harris survey, found a 7-bbl. production in a sand at 790 to 810 feet.

The Simms Oil Co.'s No. 5 Boyd, Meador survey, started at 3,000 bbls. from sand at 2,940-63 feet and the same company's No. 10 Rose, Harris survey, was a 360-bbl. well at a total depth of 2,955 feet.



John says Lone Star's 84th engine is on the car

JOHN Bumpus, the big yard foreman at the Cooper Plant, just reports "The last four beds for Lone Star are leaving the yards." John's whole gang knows that this shipment represents the eighty-fourth Cooper engine for the Lone Star Gas Company and they get just as much satisfaction from the fact as we who are in the Sales Department.

We have a mental picture of John ordering another spike or two here and another brace there as he made his final inspection of the loaded car. The finest engine the Cooper Plant ever turned out could be ruined in shipment if carelessly loaded, so John always accepts the full responsibility of his job; yet, like everyone else in the Cooper organization, he can't help feeling a little special interest in these engines which are going to a customer who has shown such confidence in Cooper equipment. When a company continues to grant us the whole responsibility for all of their compressor equipment, it is just human nature to give the very best in both equipment and service.

The C&G COOPER CO.

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626 GREAT SOUTHERN LIFE BLDG., DALLAS, TEXAS

Since 1833 Engineers and Builders

Pennsylvania-West Virginia

By D. S. Wakenight

Eastern fields report several producers better than average and one good gas well. Hay & Roberts deepen Ritchie County, West Virginia well, which increases to 75 bbls. Daily Oil Co.'s No. 3 Crider, Morgan County, Ohio, estimated 50 bbls. Much test work in West Virginia.

PITTSBURGH, Pa., March 17.—The Eastern fields report the completion of several producers better than the average and one good gas well during the week. For several days the fields were covered with the deepest snow of the winter and telegraph and telephone communication with the West Virginia and southeastern Ohio fields was interrupted. Telegraph communication to the East was shut off for three days. Operators in the West Virginia and southeastern Ohio fields have slowed down and will start very little new work until the weather improves. The market will also have considerable to do with the starting of new work. Producers of Pennsylvania grade crude were somewhat disappointed last Monday morning when Corning, Cabell, the two Somerset grades and Ragland were advanced and Pennsylvania grade was unchanged. The explanation from an official source was that the Pennsylvania grade was advanced so rapidly during the latter part of last and the first of this year as to make the difference between this and other grades too great and for that reason Pennsylvania was not moved up. However, producers express confidence in an early advance.

Field Developments

The West Virginia fields completed about the usual number of wells and only two, one an oil producer and the other a gasser, better than the average size. The oil producer is owned by Hays & Roberts, on the W. W. Lawrence farm in Murphy district, Ritchie County, West Virginia. Their No. 3 was drilled deeper into the salt sand, increasing its production to 75 bbls. a day. The location is inside of defined territory and only its size important. In Union district, north of Auburn, the South Penn Oil Co. but a gasser good for 7,250,000 feet a day when it drilled its test on the Loma Sheets farm into the Big Injun sand. This location is in a section that has been furnishing some large gas wells.

The only departure from light pumpers and dry holes in the southeastern Ohio fields was made by the Daily Oil Co. when it drilled its No. 3 on the C. C. Crider farm, located in Section 23, York Township, Morgan County, through the Berea grit, estimated to be good for 50 bbls. a day. This well is in the vicinity of several good wells on this and adjacent farms. When the first few wells came in last year it looked promising for the development of a new pool. Subsequent tests disproved the theory.

Of the three divisions, the southwest Pennsylvania fields are making the poorest showing. At the close of last month there were but 33 wells drilling and all but eight located in Greene County, and the most of them drilling for gas.

West Virginia Completions

In the number of wells completed during the week, the West Virginia fields held first place. In Union district, Lewis County, the Reserve Gas Co. has now drilled No. 5 on the Lee Maxwell farm through the Speechley sand. It is a gasser in the lower production at a total depth of 2,991 feet. In Fremans Creek district, the Carnegie Natural Gas Co. has a Gantz sand gasser at a test on the E. M. Talbot farm. On the west fork of Dutchmans run, Murphy district, Ritchie County, A. B. Morris & Co.'s second test on the W. D. Woods farm is dry in the salt sand and drilling to the Big Injun. In Clay district, R. W. Elder & Co. have a duster in the Squaw sand on the W. P. Moore farm. In New Milton district, Doddridge County, W. D. Gribble & Co. have drilled their test on the J. P. Burbridge farm through all sands to a total of 3,040 feet, a duster. In West Union district, the Carter Oil Co.'s second test on the Isaac Smith farm is good for 15 bbls. a day in the Big Injun sand.

On Triplet Creek, Spencer district, Calhoun County, the Carter Oil Co.'s No. 33 on the Radecker & Co.'s tract is dry in the Berea grit and only a light gas pressure in the Big Injun sand. On Carney run, Center district, Wetzel County, the Carnegie Natural Gas Co.'s No. 3 on the Rufus Long farm is a 2,000,000-foot gasser in the Big Injun sand. On Buffalo Creek, Carroll district, Lincoln County, the Cambridge Gas & Carbon Co. completed and shot in the Berea grit a test on the W. W. Reynolds farm, a light gasser. On Charleys Creek, Grant district, Cabell County, the Midway City Gas Co. has a fair gasser in the same formation at a test on the John Vance farm. On Rich Creek, Grant district, Wayne County, the Columbia Gas & Electric Co. is starting a test on the Guyandotte Land Association's tract, 2 miles east of Quaker Postoffice. In Grant district, Ritchie County, the Reno Oil Co.'s No. 8 on the Ira Jackson farm is a gasser in the Big Injun sand. In Carroll district, the Laurel Development Co. has a gasser in the Big Injun sand at a test on the Hal Stewart farm. In Elizabeth district, Wire County, Parks & Co.'s test on the Sherman Evans farm is dry in the Squaw sand.

Harrison County

In Ten-Mile district, Harrison County, W. Marsh & Co. have a gasser in the Maxon sand at a test on the G. L. Hurst farm. In Sardis district, the Clarksburg Light & Heat Co.'s test on the W. J. Robey farm is a gasser in the Gordon sand. In Grant district, the Hope Natural Gas Co. drilled No. 4 on the Cete Stout farm through the Speechley sand to a total depth of 3,050 feet, a duster in all sands. In Freemans Creek district, Lewis County, the Carnegie Natural Gas Co. has drilled down its old No. 1 on the F. M. Rexroad farm, a gasser in the fifth sand. In Collins Settlement district, Newton Clayton & Co. drilled a test on the J. C. Smith farm from the Big Injun to the Gordon sand, a 5-bbl. pumper in the lower formation. In Courthouse district, the South Penn Oil Co.'s test on the Michael Tims farm is through the fifth sand and dry.

In DeKalb district, Gilmer County, the Hope Natural Gas has a Big Injun sand gasser on the J. S. Gainer farm. In Center district, the P. K. Oil Co. has drilled in a Maxon sand gasser at a test on the Fletcher Stout farm. In the same district, the Chartiers Oil Co. has drilled through the Maxon sand at a test on the L. S. King farm, showing for a gasser, shut down for orders. In Otter district, Braxton County, the Pittsburgh & West Virginia Gas Co. has a salt sand gasser on the Crestes Whitesell farm. The Grantsville Oil & Gas Co.'s second test on the J. B. Dye farm in Sheridan district, Calhoun County is a 3-bbl. pumper in the salt sand. In Washington district, the Hope Natural Gas Co.'s test on the Millie Griffin farm is a gasser in the same formation. In the same district, the test on the J. W. Vincent farm is a gasser in the Big Injun sand and the test on the S. S. Kelley farm is a dry hole.

Test Wells Drilling and Starting

In the West Virginia fields distributed over a large area and for the most part in defined territory, there is quite a little test work starting. Only a few of the number can be classed as wildcats. The motive for starting is to test out farms to know if they will produce oil in commercial quantities, if not, cancel the lease and stop paying rental. In Liberty district, Marshall County, Orndoff & Co. started to drill a test on Olive Gray farm. In the same district, the Lynn Camp Oil & Gas Co. is fishing on the Thomas Blake farm. In Union district, George P. Wasmuth & Co. rigged up at No. 2 on the John Otte farm. In Church district, Wetzel County, the C. M. Perry Gas Co. has drilled to a depth of 555 feet and shut down on the Zura Himilrick farm. In Church district, Oscar Orndoff & Co. are due in the Big Injun sand at a test on the W. E. Johnson farm. In Clay district, the Carnegie Natural Gas Co. is due in the sand on the Margaret Abrigg farm. In the same district, the same company started to drill a second test on the S. L. Long farm. In the same district, the Hope Natural Gas Co. is due in the fourth sand on the Thomas Wade farm. In Center district, the same company is due in the Big Injun sand on the J. K. Long farm.

Calhoun County

In Washington district, Calhoun County, the Hope Natural Gas Co. made locations on the Roy Postalwait farm and Mary E. Johnson farm. The same company is drilling on the Charles E. Johnson farm and due in the sand on the Owen Hicks farm. In Union district, Harrison County, the Hope Natural Gas Co. is drilling at 3,940 feet on the D. M. Cole farm. In New Milton district, Doddridge County, the same company is rigging up on the E. L. Davis farm. In the same district, D. W. Gribble & Co. drilled to a total depth of 2,700 feet on the J. P. Burbridge farm and shut down. Nothing was found in the formations drilled through. In Liberty district, Marshall County, the Hope Natural Gas Co. is due in the Gordon sand on the Levi Bush farm. In Central district, Doddridge County, Walter Nutter & Co. are fishing at 1,800 feet on the R. M. Dotson farm.

In Collins Settlement district, Lewis County, E. C. McCall & Co. rigged up to drill on the Maud Gillen farm. In the same district, Newton Clayton & Co. rigged up on the Enon Clark farm. Warner & Co. are fishing for tools on the P. E. Bond farm. In Central district, Gay Zinn & Co. rigged up on the Mary J. Mainer farm.

In Grant district, Ritchie County, Pritchard & Co. shut down on the Joseph I. Vincent farm. In Murphy district, the Chemical Oil Co. has a rig up and machinery at a location on the D. M. Miller heirs' farm. In Union district, Wood County, the Penn Royal Oil Co. rigged up to drill on the Hebrick-Rapp farm. In the same district, Bowser & Ekas are due in the sand on the Walter Willis farm.

Lincoln County Tests Delayed

In Union district, Lincoln County, Roy & McComas shut down for a new cable on the Oliver Adkins farm. In the same district, the Columbia Gas Co. shut down for the same cause on the Robert Lovejoy farm. In the same district, C. C. Wolf is due in the Big Injun sand on the G. A. Adkins farm. In Carroll district, H. P. Moore is due in the salt sand on the E. F. Johnson farm. In Curry district, Putnam County, the Dunbar Gas Co. is drilling at 1,500 feet on the W. L. Austin farm. The Lee district, Calhoun County, J. A. Rumisell is running casing on the S. & P. Stuttler farm. In Center district, Park Bowser shut down for a cable on the David Mathess farm. In Sheridan district, W. H. Bickle is rigging up on the J. M. Bennett heirs' farm. Martin Crawley started to drill on the J. A. & M. Bock farm.

Gilmer and Braxton

In DeKalb district, Gilmer County, Satterfield & Co. are rigging up on the Eda E. Bush farm. In Troy district, the Star Oil & Gas Co. is fishing on the Clarence Woofter heirs' farm. In Otter district, Braxton County, the West Virginia Central Gas Co. started to drill on the Burk Beckett farm. In Birch district, the Pittsburgh & West Virginia Gas Co. started to drill on the Charles Dye farm. The same company is building a rig on the W. C. & G. B. Stonestreet farm.

Completions in Southeast Ohio

In the deep sand territory in southeastern Ohio, in Section 10, Perry Township, Licking County, the Pure Oil Co. has a better producer than first indicated when drilled through the Clinton sand. They swabbed 48 bbls. the first 24 hours after it was shot. In the shallow territory in Lot 16, Madison Township, the Ohio Fuel Supply Co.'s second test on the S. L. Lake farm is a 3-bbl. pumper in the Berea grit. In Lot 11, Hanover Township, G. W. Settles & Co. have a very small show of oil at No. 4 on the G. W. Settles farm. In Lot 22, Franklin Township, Ralph Brothers completed No. 8 on the Boy Scout farm, a very light pumper. In Lot 16, Madison Township, W. W. & A. T. Wehrle drilled a test on the J. N. Stasil farm through the Big Lime formation, good for 15 bbls. a day. This location is one-fourth of a mile north of the Ohio Fuel Supply Co.'s test on the John Gleckler farm.

Small Pumper in Knox County

In Section 18, Harrison Township, Knox County, Snyder & Rohrer completed No. 5 on the Hugh L. Green farm, a light pumper. In Section 19, Clay Township, Decker & Co. are through the sand at a second test on the G. M. Divan farm, a duster. In Liberty Township, Washington County, Owen Blair and Walter Laughlin drilled a test on the Charles Howell farm through the Maxon sand, a fair gasser and has a good showing of oil. This location is 1,200 feet east of production. In Section 1, Adams Township, S. J. Bogard & Co. completed through the Berea grit their test on the C. T. Engle farm, a duster. In Section 10, Washington Township, Monroe County, the Whiten Oil Co. and others are rigging up to drill a test on the W. H. Weckbacher farm.

In Newport Township, Washington County, the Valentine Oil Co. has drilled No. 6 on the Jessie Valentine heirs farm through the Keener sand and showing for a 25-bbl. producer. This location is 600 feet southeast of No. 1, a light pumper.

MOORE TUBULAR STEEL DERRICKS

The World's Strongest Derrick—*in the Punjab*

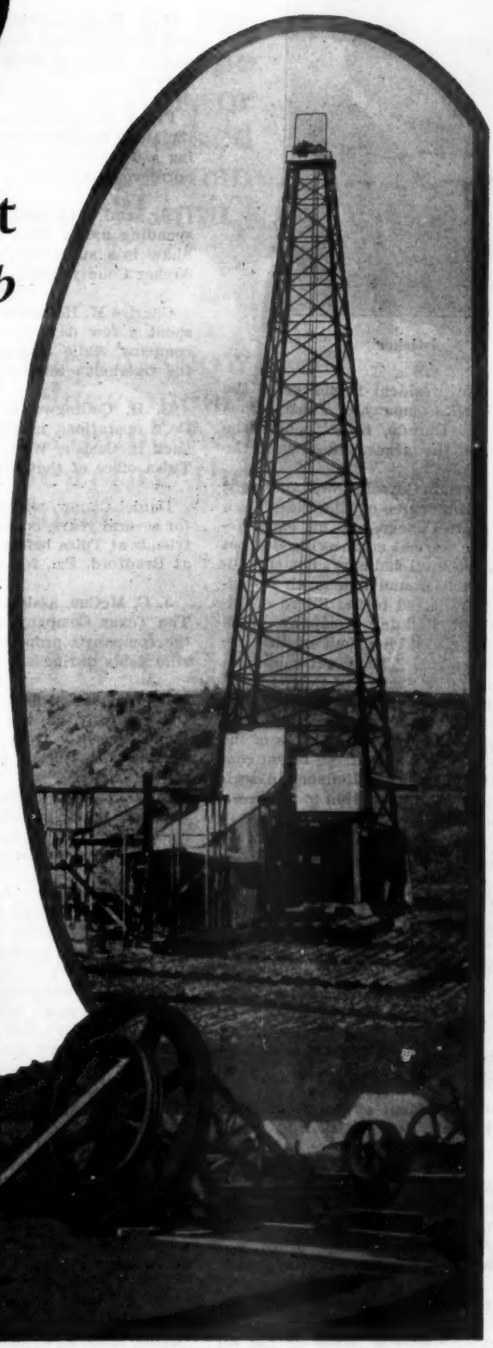
Erecting what is probably the world's strongest derrick—a MOORE *106-foot Combination Drilling Derrick, having estimated safe capacity of* 650,000 *lbs., allowing factor of safety of* 4

THESE operators in far-off Punjab of British India, are taking no chances on derrick breakdowns or failure from any cause whatever—wind, fire, weather, rot, insects, drilling stresses and what not. They are playing safe, yet doing a most economical job because the derrick will last a lifetime, without repairs, and be good for drilling many future wells if moved to new locations.

One special advantage of the MOORE derrick is its tubular design: If any part is lost or damaged, it may instantly be replaced with pipe on the ground. Another advantage is *the superior strength of the tube.*

The tube is practically twice as strong as any other structural section which can be used for derrick legs. This means greater strength with less weight, and important economies in transportation and erection.

Photos by Courtesy of Continental Supply Co.



LEE C. MOORE & COMPANY, Inc., Pittsburgh, Pa.

ESTABLISHED 1907

CASPER, WYO. Midwest Building — DALLAS, TEXAS Magnolia Building — TULSA, OKLA. Atlas Life Building — SHREVEPORT, LA. 824 Prospect Avenue

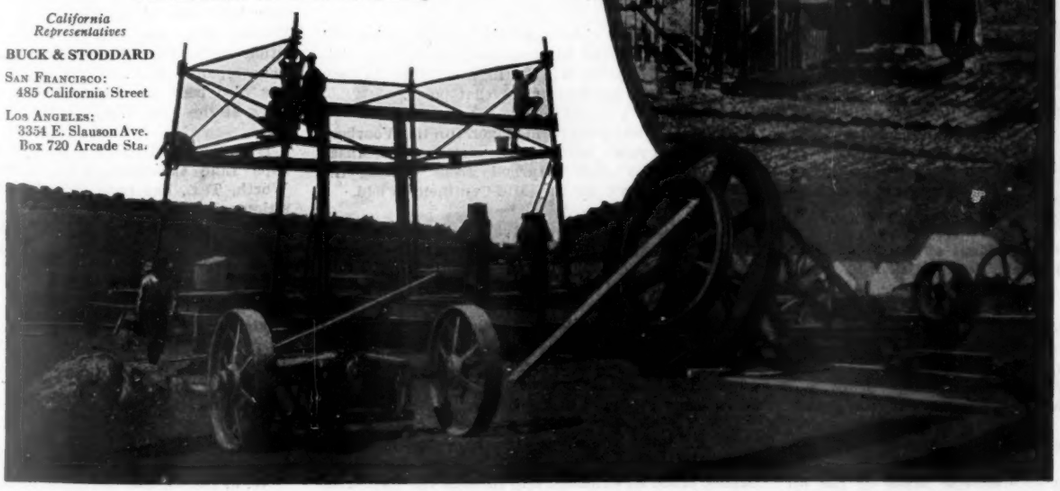
PARKERSBURG, W. VA.—Union Trust Building

California Representatives

BUCK & STODDARD

SAN FRANCISCO: 485 California Street

LOS ANGELES: 3354 E. Slauson Ave. Box 720 Arcade Sta.



MEN KNOWN IN OILDOM

F. A. Pielsticker

F. A. Pielsticker, vice president in charge of the refineries of the Skelly Oil Company, of Tulsa, makes his headquarters at El Dorado, Kans., where the company operates one of the largest refineries in the State.

Mr. Pielsticker was born in Carroll, Iowa, and spent his youth on a farm. His degree of Electrical Engineer from the Iowa State College, and his early activities in the field of electrical engineering did not portend his entry into the oil industry, but the advent of Spindletop in 1902 found him much in evidence. In 1907, he was elected to the Board of Directors of the Midland Refining Company of El Dorado, Kans., becoming vice president of that organization shortly afterward. The recent consolidations of the divisions of the Skelly Oil Company resulted in his election to his present office.

Mr. Pielsticker's constructive activities in the industry placed him upon the Board of Directors of the American Petroleum Institute, and at the recent convention of the Western Petroleum Refiners' Association at Dallas, Tex., caused his election to the presidency of that organization.

PERSONAL PARAGRAPHS

J. S. Carroll, of New York City, has been elected a vice president of the Johns-Manville Company.

• • •

L. M. Day, of Dayton, Ohio, has been inspecting prospects in Chambers County, Texas, for associates in that city.

• • •

D. F. Connolly, vice president of the Texas Production Company, Denver, Colo., visited in Tulsa for a few days last week.

• • •

R. L. Howard, vice president of the Pennok Oil Company, has returned to Tulsa after a week's business trip to New York City.

• • •

T. F. Manville, formerly president of the Johns-Manville Company, has been elected chairman of the board and the executive committee.

• • •

Robert Nolen has entered the ranks of the oil scouts and will scout the Wichita Falls district for the Unity Oil Company of Houston, Tex.

• • •

H. G. Trimble, sales manager of the National Supply Company, with headquarters at Toledo, Ohio, visited the Casper office of the National for a short time looking over the situation there.

W. H. Elliott, of Tulsa, is spending six weeks in California on business for Black, Sivalls & Bryson, tank manufacturers of Bartlesville, Okla.

• • •

E. L. DeGolyer, vice president and general manager of the Amerada Petroleum Corporation of New York City, was in Tulsa one day last week.

• • •

F. H. Bedford, a vice president of the Standard Oil Company of New Jersey, sailed for Europe last week from New York City in the S. S. Berengaria.

• • •

Harry Mount, well known operator in the Indiana fields and later in Mexico, is in Houston, Tex., for the present looking over prospects in the Gulf Coast region.

• • •

C. F. Rouze, southwestern manager for the General Motors Truck Company, stopped off for a few days at Tulsa while making a trip through the oil country.

• • •

Frank E. Hutcheson, general sales manager of the Moon Manufacturing Company, Chicago, is making a 6-weeks trip through southern Oklahoma and northern Texas.

• • •

Mr. and Mrs. Bert Shaw of Wichita Falls are spending a few days at Mineral Wells, Tex. Mr. Shaw is a successful operator and producer in the Archer County Field.

• • •

Charles M. Hellmuth, of the Hoyt Metal Company, spent a few days in Tulsa in the interests of his company while making a survey of conditions in the Oklahoma territory.

• • •

G. H. Collingwood, in charge of the Gypsy Oil Co.'s operations in the Rocky Mountain region is back in Casper, Wyo., after a business trip to the Tulsa office of that firm.

• • •

Daniel Clancy, who has been in the Mexican fields for several years, is back in the States and will visit friends at Tulsa before returning to his former home at Bradford, Pa., for a visit.

• • •

J. C. McCue, assistant manager of production for The Texas Company, made a tour of inspection of the company's properties in the Wichita and Amarillo fields during the past week.

• • •

R. W. Loucks, field superintendent of the Carter Oil Company, in the Rocky Mountain region, returned recently from Tulsa where he was in conference with officials of the company.

• • •

H. D. Elvidge Jones has resigned as advertising manager of the Reading Iron Company, to become advertising and sales promotion manager of the Martin-Parry Corporation, of York, Pa.

• • •

James Douglas, chief geologist of the Union Oil Company, has moved his headquarters to Fort Collins, Colo., where he will be in the future to look after the firm's interests from that point.

• • •

L. E. McCune, western manager for the Voorhees Rubber Company, with headquarters at Kansas City, Mo., has just returned from visiting the Bridgeport stores in the Mid-Continent Field.

• • •

Clifford Collins of Niagara Falls, and Charles F. McGown of Sarnia, Ont., have left for Miri, Sarawak, British Borneo, where they will drill for the Royal Dutch-Shell Company under 5-year contracts.

• • •

H. C. Miller, petroleum engineer of the United States Bureau of Mines, headquarters at San Francisco, Cal., spent several days in the oil fields of California gathering data for papers on safety work being prepared by the bureau.

• • •

C. P. Bowie, engineer in charge of the San Francisco office of the United States Bureau of Mines, made an extended trip through the California oil fields in connection with various activities of the bureau being carried on in these fields.

• • •

H. M. Harris, chief engineer for the Lucey Corporation, was in Casper, Wyo., a short time ago looking over the affairs of the General Supply Company, the distributor in that region for the Lucey line. Mr. Harris lives in Chatanooga, Tenn., where the manufacturing plant of the Lucey Corporation is located.

• • •

J. O. Buchta, treasurer of the Bartlesville Supply Company of St. Louis, Mo., is leaving for a trip through Wyoming, Montana and Colorado, which will include a stop at Craig, where Mr. Buchta will look over the new Colorado Field.

• • •

Harry Heasley, president, Robert D. Sharp and H. J. Crawford, vice presidents of the Oklahoma Natural Gas Company, attended the stockholders' meeting at Pittsburgh recently, at which time the quarterly dividend was increased from 6 to 8 per cent.

• • •

M. G. Hale, who has been connected with the land department of the Monroe Petroleum Company at Wichita Falls, Tex., for three years past, has accepted a position with the Roxana Petroleum Corporation and will have his headquarters at Salina, Kans.

• • •

Oscar Thomas, district manager of the National Supply Company, returned to Casper, Wyo., from a trip over the southern part of Wyoming and northern Colorado, where he was inspecting field conditions relative to the demand for oil field supplies the coming season.

• • •

W. F. Carvell, treasurer of the Hammond Oil Products Company, of Wilmington, Del., formerly with the Carhill Petroleum Company, Inc., was in Pittsburgh last week, calling on old friends. Recently Mr. Carvell made an automobile trip through the oil fields of the Pacific Coast.

• • •

C. W. Mullalley, one of the executive force of the Arkansas Natural Gas Company, with headquarters at Shreveport, La., recently made an inspection trip through Texas. Mr. Mullalley is a former resident of Oil City, Pa., where he served as city controller for many years.

• • •

R. J. Lindsay, vice president of the Hope Engineering Company, of Mount Vernon, Ohio, was in Casper, Wyo., from the home office of that firm, inspecting conditions relative to the coming season's work in the oil fields. The Hope has laid many of the large pipe lines in the Rocky Mountain region.

• • •

Jack Cleary, chief engineer for the Midwest Refining Company, Casper, Wyo., and a crew of men were in the Baxter Basin country recently marking corners and making two new locations for Midwest tools for the coming season. Later the party went to the Hiawatha Dome on the Colorado and Wyoming State line.

• • •

J. B. Hayden, for the past five years division superintendent of the Texas Pipe Line Company, at Ranger, Tex., has been transferred to the same position at the Fort Worth divisional headquarters of the company. E. F. Horrigan, chief clerk at Ranger has also been moved, and will continue as chief clerk at the Fort Worth office.

• • •

E. L. Strum, division superintendent of the Texas Pipe Line Company, with headquarters at Fort Worth, Tex., has been transferred to the same position with the company at Shreveport, La. Byron B. Robinson, chief clerk of the Fort Worth division, will also be transferred and will hold the same position with the Shreveport office.

• • •

N. A. C. Smith, chief chemist of the Petroleum Division of the Bureau of Mines, spent two weeks at the San Francisco office of the bureau during February. Mr. Smith left San Francisco accompanied by M. J. Gavin, refinery engineer of the bureau at San Francisco, to hold a conference in Salt Lake City and Boulder Colo., regarding bureau activities.

• • •

W. J. Dixon, field manager of the Penn Petroleum Company, operating in the Osage Field in Washington County, Wyoming, was in Newcastle, Wyo., on a business trip to arrange for a visit of the company's officials in the near future. This company has its headquarters in Philadelphia and a plan for further development is expected to be inaugurated upon the visit of the officials to the field.

"And I Didn't Say May-Be"

is the expression used by the oil man when asked if the packer shut off the water, or saved the gas; or when asked by the inexperienced man whether the famous "Limit" Plug did its duty.

Those who have tried it, know the wonderful achievements that have been accomplished with packers bearing the trade-mark and slogan,

Red Packers Pack

Reg. Trade-Mark

ROBINSON PACKER COMPANY

Factory:
Coffeyville, Kansas
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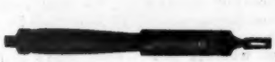


Executive Office:
Tulsa, Oklahoma
Phone O-999

EQUIPMENT AND SUPPLIES

Sample Bottles Are Important Factor in Selling Petroleum

Mid-Continent refiners seem to stand united over the proposition that sample bottles can make or break sales of lubricants. Sample bottles afford ease in handling and exhibiting practically all kinds of refined products, but in the lubricating end, they are indispensable, according to a number of sales managers interviewed.

"In selling lubricants, particularly motor oils, salesmen find visual evidence is necessary," one sales manager asserted. "The buyer must be shown. The salesman must give him something to look at, to handle, to admire, and then to buy. In looking at the sample as it is displayed in the neat, clear glass bottle, the buyer sells himself the lubricant before the salesman asks for the order."

As pointed out by other men, specifications may be duplicated in selling lubricants, but the buyer wants to ascertain the color for himself. In the ordinary sales, the salesman offers a sample. The buyer takes the bottle, reverses the position of the bottle, and watches for the drop to fall from the bottom of the container. He thus gauges the viscosity of the material, but he gives more importance to his judgment on the color, which is the most important result of the sample display. Specifications will be used for viscosity and other tests, but the color is shown, and oils are purchased on color bases, largely through the disclosures made by the sample bottle.

Need of Good Bottles

For this reason, refiners point out, it is necessary for the sample bottle to be made of absolutely clear white glass. A slight canary or green tinge or a cloudy effect, may result in the rejection of the sample and the loss of a large order through no fault of the oil. Care also must be used in the construction of the bottles so they afford clear inspection of the sample from all angles.

Most refiners have settled on the standard size 4-ounce cylindrical sample bottle and they equip their salesmen with convenient sample cases for carrying a number of these bottles safely and available for instant inspection by the buyer. Most sample cases are fitted with small jars for greases also, but the purpose of the cases is to facilitate the display of lubricants.

Many refiners prefer the rounded shoulder bottle, declaring that they can obtain a better view of the lubricant from a quartering position than with the square shouldered bottle. In this matter, however, there is a variance of opinion, many refiners holding to the square shouldered bottle. Other refiners cling to square bottles, and others prefer larger sized bottles. No uniformity has been observed in the opinions of the sales managers interviewed, but as stated above, a majority of the refiners and salesmen prefer the 4-ounce cylindrical bottle, and a large number of these prefer the round shouldered bottle.

An innovation has been observed in the use of sample bottles, which promises to become popular. Many refiners are now having their names, trade marks and addresses blown into the sample bottles, which stands as a permanent record of the sample. In addition, all samples are labeled exactly, with all specifications clearly shown.

The corks are sunk to the level of the opening of the mouth of the bottle or even into the neck of the bottle, after which wax is poured over the cork and around the neck, securely sealing the bottle and giving a neat appearance to the sample. The wax is stamped before hardening. A firm, well-rounded surface without a projecting cork also has been found beneficial in promoting handling and inspection by the buyers.

Manufacturers also are making sample bottles with either the polished bottoms or the ground glass bottoms. Preference of the one kind over the other is still a matter of opinion with many men.

Refiners are unanimous in the expression that sample bottles have been responsible for the great increase made in lubricant sales within recent months and they declare they are unable to devise a more convenient or satisfactory method of sales by samples than the best features embodied in the one now commonly used.

JOINS LUCEY ORGANIZATION

Hugh B. Hodges, formerly superintendent of rotaries for the Skelly Oil Co. at Wilson, Okla., has just joined the sales engineering organization of the Lucey Manufacturing Corp. He left Tulsa last Monday for Chattanooga, Tenn., where he will familiarize himself with the latest improvements in the Rex rotary, and will proceed on the 20th, by way of New York to make a four month's trip to the British West Indies and Venezuela. Mr. Hodges is well qualified for this work because of his extensive experience as superintendent for various concerns operating Lucey rotaries.

NEW VALVE CATALOG SHOWS IMPROVEMENTS

Several important changes in the design and construction of valves manufactured by the Homestead Valve Manufacturing Co. of Homestead, Pa., are noted in the new catalog of the company's products, just published. The cam of the quarter-turn valve has been re-designed and is machine-finished to give a smoother working plug and one which will not rise from its seat. The principle of lubrication has also been adapted to the Homestead valves.

The principle underlying all Homestead quarter-turn valves, according to the booklet, is to provide a straight and nearly frictionless passage of the same area as the line on which the valve is installed, and at the same time to make it possible to open or close the valve almost instantaneously.

The catalog is of standard size and contains 40 pages. It is attractively printed on enamel paper and contains complete descriptions of valves for almost every possible purpose. The Homestead valve made of cast steel, and the Homestead-Hovalco Blowoff valve of cast steel for higher temperatures and pressures, are especially called to the attention of designing and operating engineers.

OIL COUNTRY GOODS REPORTED FIRM; GOOD DEMAND FOR STEEL PRODUCTS

By B. E. V. Luty

PITTSBURGH, Pa., March 17.—The report of steel ingots produced in February shows that the rate was considerably higher than supposed, averaging 47,000,000 gross tons per annum during the month, while few, if any, of the current estimates had run above 45,000,000 tons.

The high month last year, also the high month in the whole history of the steel trade, was April, with a 49,000,000-ton rate. The low month of last year was December, with a rate of 33,400,000 tone. Thus there was a jump in the production rate of 33 per cent in two months, which, if not absolutely unprecedented, is at least very remarkable.

Mill operating conditions have been very favorable, there being not the least difficulty about fuel, transportation or labor. The forebodings about labor shortage on account of the change from the 12-hour to the eight-hour shift, which was completed by December, are seen to have been entirely unfounded.

The result of these good operating conditions has been the rapid speeding up of shipments, in accordance with the increase in buying that began in December, whereby quick shipment is made on new orders and jobbers and manufacturing consumers have no occasion to anticipate requirements, being able in the majority of commodities to get delivery whenever they choose to place orders.

Production Above Average

Steel salesmen are very busy now, for there is plenty of steel to sell, also a good demand. The prevalent view is that the offerings are going to outrun the demand, not on account of demand being light but on account of production being so large, for last year was a big tonnage year in steel whereas production is now running at 10 per cent over the average of last year. In some quarters it is already being predicted that February will prove to have been the high month of this year in production, the present month showing a slight decrease. No large decrease in mill operations, however, is expected in the next few months.

The United States Steel Corp. showed an increase in unfilled obligations during February of 114,472 tons, which is better than had been expected in some quarters, where a decrease would not have caused surprise. January had shown an increase of 353,090 tons and December an increase of 76,755 tons. there having been decreases in each of the preceding eight months.

The corporation lost heavily in February in unfilled tonnage in tin plates and rails, as these commodities were already sold up for the half year and there were heavy deliveries. In sheets and wire products it broke even, approximately. In tubular goods it gained, booking more than it shipped. In bars, shapes and plates it gained something, chiefly on account of freight car material booked, and merchant bar contracts entered for second quarter.

Considering finished steel products as a whole, prices are only moderately steady. In the majority of products there is some irregularity, some mills shading prices while others do not need to. There are no irregularities at all in pipe mill products except in boiler tubes, which are being shaded as is so often the case. Merchant pipe and oil country goods are very firm.

Oil Goods Prospects

The pipe mills are scheduled ahead on some sizes of tubing and casing and cannot promise shipment in less than a few weeks, while on other sizes fairly prompt shipment can be made. Pipe mills regard consumption prospects as excellent through the summer, in both oil country goods and merchant pipe.

No new business of any consequence is reported in oil storage tanks and it is said there is much capacity in second hand tanks to be picked up on favorable terms.

Tin plate production continues very heavy, with consumers taking deliveries freely, to be on the safe side, while mills are adding a little to stocks for the rush in April and May.

Forging billets are fairly steady at $45, Pittsburgh, with quick shipment readily obtained on new orders.

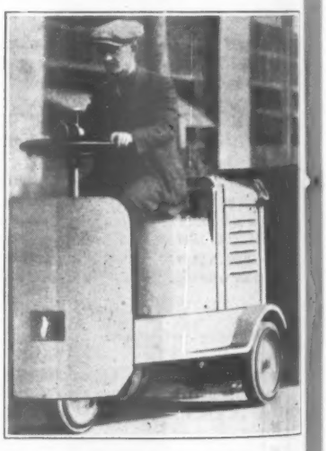
FOR STEAM MEASURING WITH SMALLER UNITS

The more elaborate flow meter installations are often thought inadvisable in plants operating a few boilers of 100-h.p. capacity or less, and in the plants with numerous smaller units that are gradually being replaced with larger boilers. Still, efficiency is just as desirable there as elsewhere, so to meet the need for adequate steam measuring in these plants the Republic Flow Meters Co. has brought out the R. B. meter. It indicates to the fireman the load carried on each boiler.

The R. B. meter system is electrically operated and consists of three parts: the meter body, the boiler front indicator, and the medium used to obtain a differential pressure, either of the pilot tube or orifice plate style. With this system the fireman is always kept informed on boiler performance. The R. B. meter shows up lagging or overloaded equipment. If a sudden steam demand impends, the fireman is warned in sufficient time to provide for it, and when the demand drops off he is similarly warned to curtail steam production. Thus the R. B. Meter is an aid in securing fuel economy.

SMALLEST INDUSTRIAL TRUCK

The smallest industrial truck and tractor ever built is the claim made for the "Duat" by the Clark Trucktractor Co. of Buchanan, Mich., manufacturers of the midget vehicle. This claim seems reasonable in view of the fact that the "Duat" can pivot on one wheel with a

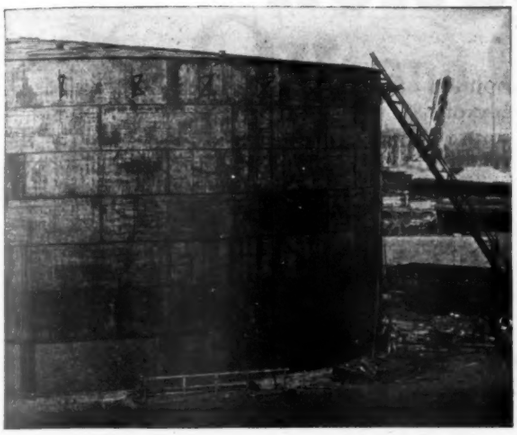


turning radius of but 52 inches, enabling it to turn around in a box car. It is gasoline powered and has a mobile crane attachment which will lift and carry loads up to 2,000 pounds. A unique safety feature of the "Duat" is a brake located beneath the driver's seat which automatically stops the machine when the driver dismounts. The three 16-inch wheels are equipped with solid rubber tires.

WILSON PERSONNEL CHANGES

J. V. McGinity, until recently Mid-Continent district manager of the Wilson Oil Tool Corp., of Los Angeles, Cal., has been appointed Eastern district manager in charge of exports with offices at New York City. Mr. McGinity has been in the oil country since 1911 and in Tulsa since 1921. Earl Hagy, formerly coastal representative for the Wilson & Willard products has been appointed Mid-Continent manager with headquarters at Fort Worth, Texas. O. C. Elliott will have charge of the Tulsa office. Mr. McGinity is to establish an office at Casper, Wyo., before leaving for New York City to assume his duties as Eastern district manager of exports.

Four million gallons of food for flivvers



This enormous storage tank at River Rouge, Michigan, can hold enough gasoline to drive 3,000 flivvers from the Atlantic to the Pacific and back again, four times. Yet, while acting as a reservoir of food for motor cars, this steel tank can itself be converted into food—for rust.

Tank metal is safe when protected as in plate "B"

LEAVE the metal surface of this tank unprotected by paint, and rust will soon start to eat a gigantic meal. Without an adequate paint covering, the steel will soon look like the "A" plate shown elsewhere on this page.

But rust cannot get a single bite out of this metal. After the tank was finished every inch of its surface was thoroughly safe-guarded against rust by a tough, elastic, long-wearing coat of red-lead. It is now protected as illustrated in the "B" plate.

Over and over again pure red-lead paint coverings prove their value in completely protecting all iron and steel oil equipment from corrosion and deterioration. Complete protection means more than coating metal with red-lead when you first put it into service. It calls for regular repainting afterward so that an unbroken film of paint is always between the metal and air and moisture. When you give metal such complete paint protection, you not only prolong the life of your equipment indefinitely, but you can also maintain your tanks and other oil equipment at a minimum cost per year.

"A"—WITHOUT RED-LEAD. The microscope shows what rust does to unprotected metal surfaces in a comparatively short time. Note the deep-rooted incrustation.

"B"—WITH RED-LEAD. Here the microscope shows a metal surface protected by the standard three-coat covering of red-lead. Note the perfect condition of the surface of the metal. Rust cannot form here.

DUTCH BOY RED-LEAD

Oil tank owners find that Dutch Boy red-lead gives the metal in their tanks full and lasting protection against rust. The outside of the huge tank shown above is now covered with a protective coating of Dutch Boy red-lead, which was used because it is *pure* red-lead.

When mixed with pure linseed oil and spread on the surface of clean metal, Dutch Boy red-lead sticks so tight it seems to become part of the metal itself. It is impervious to air and moisture. It forms a paint covering that is dense and tough, yet elastic enough to expand and contract with heat and cold so that its surface does not crack.

Dutch Boy red-lead spreads evenly under the brush. It gives to all metal surfaces a smooth protective paint covering of uniform thickness. It is easy to apply and has unusual spreading power.

You can get Dutch Boy red-lead in paste form and also as a liquid ready for application. The *liquid* comes in the natural red-lead color for coats next to steel and also in light and dark green, light and dark brown and black for finishing coats. The *paste* comes in the natural color and can be shaded to browns, greens, black, etc.

White-lead for finishing coats

Light-colored finishing coats reduce heat absorption by the tank metal and decrease evaporation. To get this light color use Dutch Boy white-lead on top of undercoats of Dutch Boy red-lead. Dutch Boy white-lead also has the properties that enable it to keep out air and moisture and guard both the inside and outside of your tanks against rust. The inside of the tank at River Rouge is covered with Dutch Boy white-lead over Dutch Boy red-lead. For specific advice on protective coverings for metal surfaces, write us.

Save the surface and you save all

NATIONAL LEAD COMPANY

New York, 111 Broadway; Boston, 131 State Street; Buffalo, 116 Oak Street; Chicago, 900 West 18th Street; Cincinnati, 659 Freeman Avenue; Cleveland, 820 West Superior Avenue; St. Louis, 722 Chestnut Street; San Francisco, 485 California Street; Pittsburgh, National Lead & Oil Co. of Penna., 316 Fourth Avenue; Philadelphia, John T. Lewis & Bros. Co., 437 Chestnut Street.

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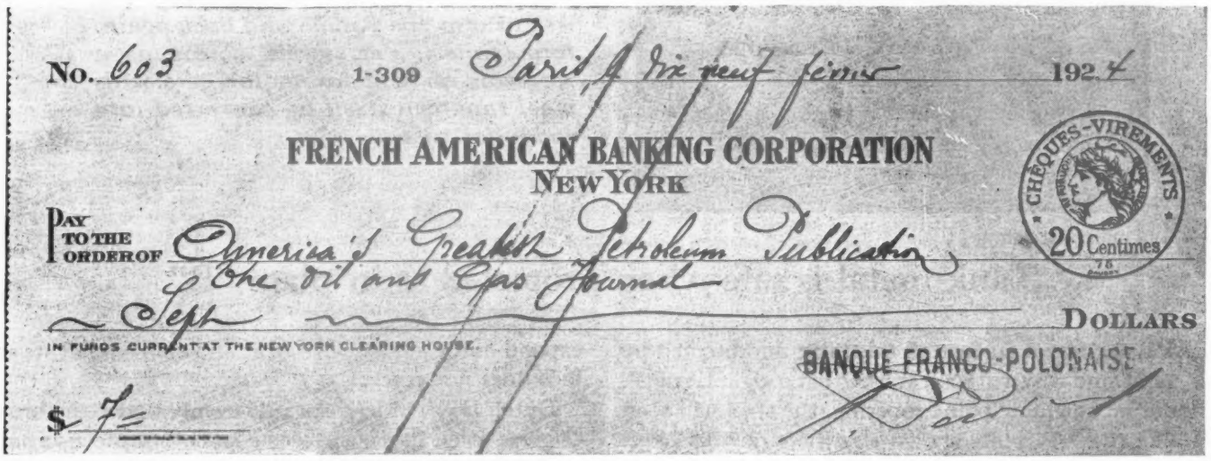

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Facts About Oil Industry Its Critics and the Public Do Not Know

Gasoline shown to be the cheapest of all commodities.

What the refiner gets out of a barrel of crude and what he sells it for.

How the supply of crude oil controls drilling.

Nation's need for a reserve stock of oil factor in prices.

Effect of phenomenal conditions in 1923 upon each field.

Cause of varying gasoline prices in different sections.

Dry holes in first tests in new fields.

Basic elements in petroleum industry.

Hazards of drilling and declining production.

How California and Powell affected securities.

Competition in the oil business of today.

Gasoline prices follow crude.

"Gas" tax cost to motorists this year $75,000,000.

Figures from government statistics.

The Oil Industry's Answer

By W. T. Anderson

The public wants to know **why gasoline is so high.**

What the Public Wants to Know

This question can be answered best by asking another: **Is it?**

Has the price of gasolines risen in comparison with the price of other products in general use?

Is it out of proportion to the cost of production?

Men now living can remember when oil sold for $10 a barrel and gasoline was a waste by-product worse than worthless, regarded as a dangerous nuisance to be got rid of as quickly as possible. No profitable use had been found for it.

The invention of the internal combustion engine and the automobile provided a use for it. In a few years the demand for motor fuel made gasoline the most important product of oil. Since then it has been a feverish race between the development of automotive manufacture and the production of gasoline.

* * *

Phenomenal Expansion of Production

In 1906 it is doubtful whether the entire oil industry produced more than 8,000,000 barrels of gasoline. Last year gasoline production in the United States reached practically 180,000,000 barrels.

Within the same period the number of motor vehicles increased from around 100,000 to over 15,000,000.

As early as 1905 there was no longer a sufficient supply of the highly volatile gasoline to operate the motor vehicles then in use. The refiners were compelled to include a larger percentage of the distillate from the crude in the gasoline. The amount of gasoline produced from a 42-gallon barrel of crude oil has risen from 4 gallons in 1909 to 13 gallons today. And **the motorist gets quicker starting and more mileage out of the present product.**

So far as service is concerned—the prompt and abundant meeting of a new and phenomenal demand that turned the industry upside down—oil men have certainly made good.

* * *

How Prices Have Gone Up and Down

Now as to the price charged for that service. A comparative table showing the range of prices since 1913 for all commodities, gasoline, housefurnishing goods, building material, cloth and clothing, farm products, and such daily household necessities as eggs, sugar, butter, potatoes, milk and flour, taken from official Governmental figures published by the United States Bureau of Labor and the Department of Commerce, appearing elsewhere in this issue, must be a sufficient answer to any fair minded man or woman.

It may be noted that gasoline was **one product on which there was no profiteering during the war.** The peak price in the 11 years was a direct reflex of the advance in crude oil prices resulting from decreased supply compared to consumption due to wartime Governmental restrictions against new operations and low prices. It was also during the height of the after-war boom when the index price for all commodities reached its highest point, yet **even then gasoline** at 170 points **was by far the lowest of the lot.** Potatoes reached 424, sugar 296, clothing 295, flour 276.

* * *

Challenges Comparison With All Commodities

Not in a single year since 1913 has the price of gasoline been as high as the index price of all commodities. It challenges comparison with any one of the staples in any year and these figures are not those compiled by the industry but as **set forth in the official publications of the Government, tabulated by the Government's own statisticians.**

Gasoline is certainly not high measured by the same range of prices as other commodities covering a period of 11 years, before the war, through the war and since.

Gasoline certainly has figured very little in increasing the cost of living in the matter of price. That answers that.

But if gasoline is shown to be comparatively cheap, rather than dear in contrast to prices of other products, it may be argued that it is nevertheless sold at prices out of proportion to the cost of production.

* * *

What Does Gasoline Cost to Produce?

This brings up the question what is fair price for a gallon of gasoline. The fair retail price of any product can be reached only by determining the respective costs of raw material manufacture and distribution.

Crude oil is the raw material of gasoline. The cost of finding and producing it varies very widely in every field and from year to year, frequently from month to month, and often from day to day. There were no less than 105 changes in the price of crude oil last year, an average of almost one day out of every three.

In recent years the average price of crude oil per barrel for the United States, according to the Department of Commerce figures, has ranged as high as $3.44 in 1920 and as low as 75 cents in 1915. Pennsylvania grade rose to $6.10 and Mid-Continent to $3.50 a barrel in 1920.

Last year Pennsylvania grade's highest was $4.25 and its lowest $2.60, while in the Mid-Continent the price of crude dropped from $2 to $1. In California early in 1923 the price for an average grade was $1.12 but most of the year it was 71 cents.

* * *

Vast Variation in Prices Explained

The uninformed layman may ask the cause of this wide difference in prices. He may think that oil is just oil. The fact is that there is probably no commodity which has so bewildering a variation in quality, cost and value.

First, there is the vast variation in the production of individual wells. Ten thousand barrels a day from a gusher like those in California last year clearly do not cost per barrel anything like the 4 barrels a day average production of the 280,000 wells of settled production that produce half the oil in the United States.

The cost of drilling a well ranges from $1,000 in the shallow district of western Kentucky through $3,000 to $5,000 in southeastern Ohio, $10,000 and $15,000 in southwestern Pennsylvania and West Virginia, $20,000 to $75,000 in Texas, $30,000 to $45,000 in northern Oklahoma and $75,000 to $125,000 in southern California.

Famous Glen Pool wells in 1905-06 costing $3,800 and the Cushing wells costing $9,500 in Oklahoma in 1916 may be contrasted with the $75,000 paid for wells in the new Stroud, Lincoln County, area today.

The California gushers were drilled a mile deep; Allen County, Kentucky, but 350 feet, while 1,500 to 3,000 feet is the ordinary range in older fields.

* * *

Hazards in Oil Production

The records show that vastly more money has been spent seeking for gold than was ever taken from the gold mines. History registers the fame of the bonanza kings of '49 and the fortunes found in the Klondike but is silent about the unfortunate thousands of gold seekers who lost their all and failed to find the precious metal. So it has been with oil. But as the lure of gold leads men to the remotest regions in the hope of being among the fortunate few the lure of striking oil carries the oil man across the continents and over the seven seas.

The hazard of dry holes falls on the man who drills and fails but there are other hazards falling upon other men in the industry, equally unforeseeable. A well is completed in a new district with every promise of producing oil in quantities that will be profitable. A pipe line company is induced to lay a line to the new well or wells at heavy expense. After a brief period of production the wells may slump, as many indeed have, the production declines below worth-while quantity and the pipe line company discovers it has lost the money spent on that line as completely as the operator who gets a dry hole loses his. As in the case of the loss from dry holes this loss to the pipe line companies is absolute. There is no way of adding it to the cost of products any more than a storekeeper without insurance could add loss by fire to his prices.

* * *

Raw Material Unknown Factor

Other industries or businesses gauge their output by the demand for the finished product. They know where to get their raw material at any time and about what it will cost. The oil industry alone is obliged to follow its wildly fluctuating and always uncertain supply of raw material. Having no control of the finding of oil which is open to any adventurous spirit having the means to undertake the search, it is ever at the mercy of the chance discovery of a new pool upsetting prices and values.

Old-time oil men recall the famous well at McDonald, Pa., in 1891, which started at 40 barrels an hour and, drilled deeper, got out of control for two days and when next gauged made 500 barrels an hour, the news breaking the oil market. The gusher wells in southern California and the Powell field's

flood had exactly the same effect on the immensely increased production of oil of last year.

* * *

There are also the hazards of storage. During the era of overproduction in California $47,000,000 was spent in building storage, steel tanks and concrete reservoirs, to hold the immense amount of oil that could not be carried into consumption. Storage for 100,000,000 barrels was thus provided but the fall in production came before it was filled, and 28,000,000 barrels of storage constructed at a cost of $17,000,000 is idle and in all human probability will never be filled or needed, another absolute loss except for what may be salvaged.

Millions in Storage Now Loss

* * *

Besides the vast difference in cost of drilling and depth of wells there is also the wide divergence in the quality of the oil.

Wide Difference in Quality of Oils

When the oil from the Gulf Coast districts is put through a refinery there is a high percentage of fuel oil and lubricants and a light percentage of gasoline. A great deal of the oil from California is good for fuel oil but relatively poor for making gasoline. The oil from the Mid-Continent and from the Eastern fields is rich in gasoline.

The value of the crude is dependent upon what proportion of products the refineries can get out of it. If they can get more gasoline it is more valuable.

* * *

But these two factors of cost of production and quality of the oil are not all that make the price of oil so changeable. There is also the fluctuation in supply and demand, in consumption and stocks, fluctuations beyond human ability to foresee so long as there is always the possibility of the discovery of a new gusher pool upsetting all calculations, as the Powell, Texas, Field coming on top of California's flood last summer.

Supply of Oil Beyond Control

It will, therefore, be seen that to arrive at a stable cost of the raw material entering into the manufacture of gasoline from month to month or year to year, is beset by the greatest difficulties. All that reasonably can be attempted is to take the average cost for some one period and figure from that basis to give the public at least an approximate idea of the cost of gasoline.

* * *

There are a multitude of factors entering into the cost of crude oil at the well of which the general public has never heard. There is the cost of the lease which varies as widely as the continent and as infinitely as human nature and the individual conditions and business ability of land owners.

Cost of Crude the Raw Material

There is the extreme range in cost of drilling due to transportation, location, depths, character of the strata, and difficulties encountered.

If oil is found there is the question of quality, whether it is good for gasoline "making" or for fuel oil or lubricants. There is the matter of rentals, royalties, depletion of the store of oil, depreciation, taxes, State and National, proximity of pipe lines and markets. There is the wide difference in the cost of lifting the oil from the bottom of the well regardless of rents, cancelled leases, depletion or depreciation, which, as shown in examples cited elsewhere in this issue, may vary immensely with the amount of production; which is also true of overhead costs and general costs.

* * *

In one State, as in California, the oil may range from 60 cents to $1.95 at the same time, according to quality, or from that 60 cents in California to $4 in Pennsylvania. And the next day, because of the opening of a new pool, all values may be shattered. So, as the experienced oil man will tell you, it is impossible to take any general price for a barrel of oil and say this is a fair price.

Range of Costs Affects Prices

Nevertheless, the public has a right to some idea about it. So let us take the average high grade oils delivered to the refinery at Bayonne for the Tide Water Oil Company in 1922, the latest figures noted in the inquiry of the United States Senate Committee of Manufactures. Elsewhere in this issue a similar example is cited for Oklahoma oils. Neither is typical of the entire United States owing to the reason that there is no fixed type but they will show what crude oil costs delivered at refineries at one specified date.

The oil delivered at the Bayonne refinery came from several fields. There was Pennsylvania, the highest grade, at $4.17 a barrel; mixed Mid-Continent and Illinois oil, at $3.03; Mexican at $1.75; Panuco (Mexican) at $2.50; and Mexia (Texas) at $3.67. The average for all for the year was over $2.59 or rather almost $2.60 a barrel.

This figures, at 42 gallons to the barrel, about 6 1/5 cents a gallon, for producing the oil at the well transporting it by pipe line or tanker and delivering it at the refinery ready to be "made" into gasoline and the other products extracted from a barrel of crude, kerosene, gas and fuel oils, lubricating oil, wax, coke and miscellaneous.

* * *

Having followed the crude oil, the raw material, to the refinery, the factory, we find that the gradations in quality, cost and value which complicate any effort to set a stable price for crude are an equal and basic difficulty in arriving at any stable refinery price. Moreover, the refining operations present as baffling complications of their own.

Other Products Affect Gasoline Price

It is not a matter of taking so much crude oil and making so much gasoline out of it and fixing the price on the cost of the crude and the refining of the gasoline. In the process of refining there are a number of other products manufactured besides gasoline. There are kerosene, gas and fuel oil, lubricating oils, wax and miscellaneous products.

Plainly whatever the refiner obtains for these other products must be deducted from the cost of making gasoline to reach the cost of gasoline itself.

But these products fluctuate in price almost as frequently as does gasoline, according to the demand and supply. So the cost of making gasoline might be one thing when kerosene was selling low and another thing when kerosene was profitable. The rise or fall of fuel oil prices would be a factor in what it cost to make gasoline at any particular time.

Again, the refiner may so regulate his process as to alter the proportions of certain of the products. If there is a greater proportionate demand for fuel or gas oil or kerosene he may find it better business to extract less gasoline, thus reducing his cost of operation and avoiding a surplus of the less immediately desired product. In which case the cost of what gasoline he makes will be affected by the difference in operating costs and by the greater return from fuel oil or kerosene than usual.

Shifting Demands for Various Products

Another phase which must be taken into consideration is that there are different processes for refining, some refineries extracting from the crude a few products only and others extracting every known product. Obviously the refinery using fewer processes is able to operate with less cost than the refinery extracting the last pint of gasoline and every variety of product.

The cheaper process means gasoline at low cost while the complete refinery getting returns from its greater recovery of products sets up a wholly different cost for its gasoline.

In the effort to give the public an idea of the fair cost of making gasoline, therefore, it is necessary to take all these factors into account. The best that can be done is to attempt to strike a fair average, which most refiners may consider too low, but which is based on specific instances illustrated by the Federal Trade Commission and cited in the La Follette inquiry of a year ago.

* * *

The Federal Trade Commission charged with the duty of investigating business operations, in a pamphlet on methods of cost finding, issued April 7, 1921, outlined the ascertainment of refinery costs on this basis:

Cost of Refining a Barrel

From a barrel of crude gasoline yielded 24.45 per cent; kerosene, 8.60; gas and fuel oil, 55.00; lubricating oils, 6.57; wax, .85; miscellaneous 1.00, and a loss of 3.53 per cent. Stated in gallons this yield from a 42-gallon barrel of crude oil was: gasoline, 10.27 gallons; kerosene, 3.61; gas and fuel oils, 23.10 gallons; lubricating oils, 2.76; wax, equal to .36, and miscellaneous, .42, with a loss of 1.48 gallons.

The cost of the crude at 6 1/5 cents a gallon and of the refinery operations which produced these products amounted to $3.41 cents and a fraction. This meant that the cost of refining was approximately 82 cents a barrel. The amount realized for these products (excluding the fractions) for the entire quantity of gasoline secured from the barrel of crude was $1.91; from kerosene, 23 cents; gas and fuel oils, 73 cents; lubricating oils, 51 cents; wax, not quite 7 cents, and miscellaneous, 4¼ cents, or a total of $3.50 and a small fraction.

* * *

This shows a profit of less than 8½ cents on the refining of a barrel of crude, including the cost of the crude oil, transportation to the refinery, and the manufacturing operations.

Great Difference in Refineries

This, of course, is subject to constant variations due to price changes for each product dependent upon the daily supply and demand for each product, the yield of each, and the different costs of crude, but it, at least, offers an example from which the public can be informed in a general way about a subject

on which there is no definite knowledge.

The refinery in question is one of the most efficient in the world, with the most complete extraction of products from crude, yet with higher costs for the larger operations and at the same time greater economies through magnitude of throughput.

But there is a great gap between the cost cited and that of a skimming plant in an oil field which skims the cream, or the gasoline, and disposes of the rest as fuel oil. In that case the refining, or rather skimming, cost may go as low as 25 cents a barrel of crude or up to 30 cents. Between these extremes are refineries which differ in products and capacity and in cost of refining, ranging all the way from 50 to 70 cents a barrel of crude.

There is, moreover, the paying of premiums for crude, a price above the posted quotations, often necessary to smaller concerns to secure their raw material.

* * *

Cost of a Gallon of Gasoline

Without attempting to establish an average, because of the uncertainties of both the producing and refining businesses, and simply to give the public an approximate idea of the range of costs and profits the cost of the crude to the refinery in this case was 6 1/5 cents a gallon or $2.60 a barrel; the whole cost of refining brought 8 cents a barrel profit; the wholesaler, after paying 2½ cents for transportation from the refinery to his bulk station had about 3½ cents a gallon to pay his other expenses and his profit, and he sold gasoline to the retailer who disposed of it to the motorist at a margin of 2 cents a gallon, out of which he had to maintain the filling station and free air, water and greasing service and get his profit. Add the 4 cents, 3 cents, 2½ cents or 1-cent tax on gasoline in the various States and gasoline so produced would cost the consumer from 17½ to 20½ cents. * * *

Having thus figured the cost of the refined product and established the profit made by the refiner on the sale price f.o.b. refinery we enter upon the method of distribution or marketing gasoline.

One phase of the oil business that puzzles the public is the sometimes wide variance between the price of gasoline in different places in the United States. This is at once attributed to manipulation. Anyone who is fair enough to seek the true explanation of this variaton in prices will find it elsewhere in this issue. It is a result of competition, natural distribution of oil, concentration of population, sectional development of other industries and commerce, transportation facilities and differing rates of State taxation.

* * *

Sales by the refinery are made to marketers or jobbers, wholesalers, who in turn sell to filling stations and garages and other pump retailers. The price at which these wholesalers dispose of gasoline to retailers is known in the trade as the tank wagon price because delivered by tank wagons. This price is based upon the cost of handling the product from the refinery to the tank wagon delivery to the retailer and, of course, includes transportation costs.

This transportation cost varies according to the accessibility of the refinery but in the case in mind, to suggest a ratio, where the spread between the refinery f. o. b. price to the wholesaler and the tank wagon price to the retailer was 6 cents, the transportation cost was 2.38 cents a gallon, leaving 3.62 cents to reimburse the wholesaler for handling and his profit.

This spread has at times gone as high as 10 cents and dropped as low as 3 cents. But these extremes were during temporary periods when the market was demoralized by what is known as "distress gasoline."

* * *

Distress Gasolines Origin and Effects

Distress gasoline, so-called, was thrown on the market by refiners in urgent need of cash through ill-advised operations, just as unfortunate business men in any line may, through error of judgment find themselves forced to sell goods at an actual loss in order to get what money they can to continue in business.

This brings us to the point of the cause of distress gasoline—the unexpected and temporarily overwhelming flood of oil from the gushers of southern California. The rapid exhaustion of Mexican wells, whose enormous production had broken the oil market in 1921 and 1922, threatened a scarcity of oil. The year 1923 opened with advancing prices for crude based on the necessity of stimulating the search for new sources of supply. The refiners, who usually stock up in the winter months when consumption of gasoline is lowest, prepared likewise under the stimulus of advancing costs and prices to meet a record demand promised by the plans of motor manufacturers to make and sell the largest number of cars on record.

* * *

Two Things Upset Calculations

Then two things happened which upset all these calculations. The weather which had been unusually favorable to motoring turned severe in February and continued unseasonably so right through the spring. The anticipated demand for gasoline did not materialize. The stocks of gasoline backed up in the refineries where it was still expected a record summer demand would require all the gasoline that could be produced.

Simultaneously came news of the amazing gushers in southern California producing crude by the tens of thousands of barrels per day per well. California, which a few years before had been unable to supply its own demand for gasoline and imported it from the Mid-Continent refineries, suddenly found itself with more oil than it needed.

The great refineries on the Atlantic Coast in need of crude for the fuel oil market they supplied, because of the decline in Mexico's production, specially adapted for fuel oil making, turned quickly to the California oil which was also peculiarly suitable for fuel oil. The Panama Canal afforded them cheap transportation by tanker.

So the stream of surplus California oil began to flow around to the Atlantic Coast refineries which had been obtaining their crude, outside that from Mexico, largely from the Mid-Continent Fields. California crude, being cheap, and available by tanker, underbid the Mid-Continent producers. Furthermore, in making fuel oil from California crude which yielded more gasoline than Mexican oil had, the eastern refineries soon had all the gasoline they needed and consequently reduced their buying of crude from the Mid-Continent. * * *

Mid-Continent Shut Out of Market

At this stage the Mid-Continent purchasers of crude oil, without a market and unable to compete with the cheaper California product, felt obliged to cut their own prices. Even then California was able to undersell them. The cutting of prices robbed the operators east of the Rockies of a proportionate return for the risk of drilling and Mid-Continent purchasers, realizing that greater production which they could not profitably sell and must pay for storing meant a double loss, adopted the policy of prorating their purchases. This meant checking production wherever possible and waiting for the effects of the California flood to pass.

Meantime what was happening to the Mid-Continent producer and others east of the Rockies through the back wash of California's cheaper crude on the eastern coast was also having its effect on Mid-Continent refiners. They were stocked with gasoline made from the higher priced oil of that field and gradually found their natural market in the Middle Western territory invaded by gasoline made in the eastern refineries from the cheaper California oil.

* * *

Need of Money Forced Sacrifice

These conditions were the cause of distress gasoline. Individual Mid-Continent producers without a market for their crude and in dire need of money were willing to dispose of it to individual refiners at a sacrifice to get what cash they could. These refiners thus provided with bargain crude ran it through their refineries and offered the gasoline for what it would bring.

This distress gasoline offered at such prices broke the open market for gasoline away below the established wholesale price and even below the actual cost of the great majority of refiners who had stocks made from higher priced crude, and were operating currently on long contracts on crude bought at the posted price and in some cases plus premiums.

When this distress gasoline hit the market the fact that it could be bought below the tank wagon rate becoming known, naturally reacted against the prevailing prices. In a falling market the tendency must be to induce others to dispose of their stocks below the regular quotation. That is the psychology in any line of business.

* * *

How Gasoline Was Affected

In the gasoline business the effect was even more weighty. Many marketers contract with the refiners for a stipulated supply over a certain period, on condition that the refinery f.o.b. price shall be so much below the tank wagon price throughout that period. These marginal contracts figure on a refinery price, say 4 or 5 cents below the tank wagon quotation to retailers. If the tank wagon price drops through any cause, such as distress gasoline being offered to spot purchasers at below tank wagon quotations, it may happen that the wholesaler's marginal contract will carry his price from the refinery below the actual cost of manufacture to the refiner. That happened last year. On the other hand, if the tank wagon price should be forced up by scarcity of crude and resulting reduction in the supply of gasoline the wholesaler would be protected to the extent of his marginal contract below the tank wagon quotations.

As the situation developed last year distress gasoline thrown on the market reduced the spot quotation for gasoline away below the actual cost of manufacturing and, of course, below the margin of reduction allowed the wholesalers having such contracts with the refiners. Wholesalers having marginal contracts saw competitors buying gasoline for less in the spot market.

This opportunity to buy distress gasoline at bargain prices and sell it at high prices based on the tank wagon rate attracted a small army of outsiders into the service station and gasoline pump business. The wholesalers having marginal contracts based on the tank wagon rate began to clamor for a reduction in that rate which would enable them to buy at the lower spot rate.

Politicians Seize Opportunity

The dissension reached such dimensions that the politicians heard of it and began agitating about the high price of gasoline. Governor McMaster of South Dakota managed to obtain a supply of gasoline at bargain prices and began selling it through State employes and stations, forcing down the retail price through using the State's credit and money to sell below marketing cost.

Wholesalers and retailers of standing appealed to the refining companies for a reduction in the tank wagon price to enable them to continue in business until the State exhausted its supply. The Standard of Indiana thereupon announced a reduction in the tank wagon price equaling the Governor's price, announcing that it had always been its business policy to sell as cheaply as any competitor even though temporarily at a loss.

* * *

With the prices for crude and refined products thus toppled there was naturally a corresponding movement in oil securities on the stock market, the shrinkage in value at one time, for leading and representative companies alone, being estimated by the Wall Street Journal at more than one billion dollars.

Whole Industry on Toboggan

Oil products, raw and refined, and oil securities, being put on the toboggan, affected the ability of the oil industry to finance itself to carry the responsibility of continuing to furnish an adequate supply of oil after the California tidal wave had ebbed as it was foreseen it must do within a year. This was one effect of the agitation about gasoline prices—to handicap the industry's ability to produce oil and gasoline by alarming investors in legitimate oil securities.

* * *

In the midst of this crisis came the gusher production in the Powell Field of East Central Texas. This area had been tested without much result in the past but suddenly one operator struck a real gusher. There was a rush to drill. The production of that field which had totaled 30,000 barrels during the entire first five months of the year, jumped to an output of 354,893 barrels for one day in November. This more than made up for the decline which had begun in California production and prolonged the surplus of crude far beyond original calculations.

Powell Gushers Prolong Depression

Powell crude selling for $1 a barrel further blocked the Mid-Continent operators and plunged them into deeper depression. But Powell gushers were short lived. A few weeks after that record of 354,000 barrels for one day the total was down to less than 100,000 barrels daily. When Powell blew up California's pools were no longer bringing in 10,000-barrel gushers. The largest wells were around 1,200 barrels a day and soon below 1,000 and even 500 barrels where once had been 8,000 and 9,000-barrel wonders.

With the disappearance of the flush production from California and Powell and the announcement that the total production of crude oil in the United States for 1923 had reached the record average of 2,000,000 barrels a day, oil men began to figure what the production of 1924 might be without the phenomenal output from Powell and California, now gone forever.

When the Flood Had Passed

They recalled that the production for 1922 before these flush fields were thought of had been only 1,109,815 barrels a day; that 1923's flood for these new flush fields had just doubled this, but that as early as January 24, 1924, the production of these flush fields had declined 449,000 barrels daily.

It was no longer a question of overproduction of oil. Consumption in 1923 had reached a total of 700,000,000 barrels a year. The production in sight for 1924 did not exceed 675,000,000 barrels with not a single flush field in prospect.

Overnight almost the oil industry was transformed from depression to activity.

* * *

It was true there were 333,000,000 barrels in storage but this was less in proportion to probable consumption in 1924 than the average stocks had been for 15 years. On the other hand, it was calculated it would require the discovery of **at least four new fields producing 100,000 barrels a day each to equal the expected consumption during this year.**

Fear of Shortage Starts Drilling

This indicated **shortage of oil for the year's requirements had the same result as scarcity has on any commodity—it increased the value of the product**—prices were advanced to stimulate drilling and the finding of new sources of oil. As crude prices advanced the refined products, including gasoline, naturally followed for the same reason. As has been seen, both production and refining in the Mid-Continent Field, the country's great reservoir of oil, had been **halted by prices below cost. To start them again required advancing of prices to encourage resumption.**

If further proof were needed to illustrate the relation and effect of supply and prices, consider that in 1860, the year after Drake's discovery, 150 wells were completed with a total production of 650,000 barrels valued at $6,240,000, or almost $10 a barrel. The following year 2,118,000 barrels were produced and the value dropped to 50 cents a barrel, a total of but $1,101,360. The war interrupted drilling but increased the demand for oil and in 1864 the production was still 2,116,200 barrels but valued at $8 a barrel. When the close of hostilities released drillers the production umped to 3,500,000 barrels and the price fell to $3.75. In 1880 Pennsylvania's production had risen to 26,245,571 barrels and oil was selling at $1 a barrel.

* * *

As production has been increased, through improved methods of finding, recovering and refining oil suggested by constant study and experience, **the benefit has been passed along to the consumers.** Time and again the demand for gasoline has threatened to exceed the supply obtainable from existing production and methods but invariably the industry has developed increased technique, improved equipment and more efficient processes, penetrating to deeper oil sands, extracting larger percentages of products and thereby keeping abreast of the ever expanding needs for petroleum products.

Benefits Passed to Consumers

At the same time **the public has been given the advantage of every gain. There has been no attempt to reserve these benefits for the sole profit of the industry;** in fact, there could not be because of the intensely competitive nature of the business. **The discovery of a new pool by any wildcatter held the whole industry at the mercy of chance.**

An examination of the record of gasoline prices over any period of years will show that they went up or down in response to the fall or rise of supply, not simultaneously, of course, but in natural sequence. Unlike eggs, for example, which may rise or fall in price from day to day according to the weather, the products of the oil industry must be assured for months ahead, otherwise the public would often have to submit to panic prices in periods of scarcity. The price of crude and, therefore, of refined oils must rest upon stocks and estimated consumption, **anticipating developments and stimulating the search** for oil when famine threatens. Today, in a month of stagnant demand, the industry must base its prices on whatever is necessary to assure an abundant **supply for the summer months of heavy consumption.**

* * *

Last year the industry guessed wrong, due to the humanly unforeseen vagaries of the weather affecting consumption and the development of the gushers in southern California and Powell. It **paid the penalty for this error** in a year of demoralized prices and depression although the rest of the country was enjoying prosperity.

Paid the Penalty for Error

These are the facts about the industry which ranks second in the country in value of its manufactured products, facts that may be verified by any fair minded man or woman from the official statistics of the United States Government obtainable through any representative in Congress.

Not excepting the great automotive industry which owes its existence and marvelous growth to the motor fuel which the oil industry provides there is not one in the world which equals the almost magical achievements of the oil business in the past score of years.

It has **speeded up American industrial and commercial life to a pace unapproached anywhere in the world.** There is a motor car for every seven persons in the United States. In Great Britain, our next most progressive rival, there is but one for every 43 inhabitants. **The rest of mankind, in a manner of speaking, crawls while Americans ride on the whirlwind, thanks to their oil industry.**

* * *

Yet, instead of being **proud of America's superiority** in the finding, production, refining and use of this magic fluid, attested by the selection of Americans to direct the search for petroleum in every corner of the globe, the American oil industry is villified at home and traduced abroad by our own citizens, made the target of every political demagog and a by-word among our own people.

An Industry to Be Proud Of

Let Americans ask themselves **is it just or wise,** even from their own most selfish standpoint, to **imperil an industry which has accomplished so much** for the country, upon which we are daily becoming more and more dependent for motive power, and upon the **uninterrupted continuance** of whose functions the **livelihood of millions in our industries and commerce rests.**

Gasoline Cheapest of All Commodities

Government Statistics Prove Prices of Other Articles in General Use Have Advanced Far More Than the Petroleum Product

By Andrew M. Rowley

Did you ever stop to consider how much oftener you hear the complaint voiced about the high prices of foodstuffs, clothing, furniture, building materials, butter, eggs, flour, milk, potatoes and other such articles of daily use than you do about prices of gasoline? And how often you have heard persons declare in regard to prices being charged for articles of food, clothing and other necessities: "The Government should investigate these prices. There certainly is no reason why they should be so far above what they were only a few years ago."

That these views of the general public are based on absolute facts is shown in the accompanying tables and graphs prepared from figures compiled by bureaus of the United States Government. These tables and graphs prove conclusively gasoline is and has been the lowest priced commodity generally used during the past 11 years and that its average cost has, during that period, always been lower than the average price of all commodities. While other articles of necessity seemed to think the sky was the limit in the after-war period during 1920 with potatoes reaching an average of four and one-quarter times the price charged in 1923, sugar nearly three times as much as in 1913 and other articles two or more times as much as they sold for in 1913, the Government figures show gasoline sold for only 70 per cent more than it had sold for in 1913.

Advance Comparatively Small

That 70 per cent increase in price, recorded during 1920 when prices of all commodities soared so high, persons in all walks of life will not soon forget them, was the highest average attained by gasoline during all of the past 11 years. Last year the average was only 12 per cent greater than it was during 1913, while sugar was about twice as high as it had been in 1913, butter about half again as much and clothing just twice as much.

When it is considered that the gasoline prices of 1920 were based on the highest prices for crude oil ever posted since the early days of the petroleum industry, that Pennsylvania crude oil sold for $6.10 a barrel and Mid-Continent crude for $3.50 a barrel, prices previously unheard of since crude prices began to be posted under the modern system of doing business, it will be seen the increase of just 70 per cent above the 1913 prices was comparatively very small. The high prices for crude oil resulted directly from Government regulation during the period of the war when stocks of crude oil were reduced to an alarming extent and it was necessary to increase prices above all previous records in order to stimulate drilling to procure a supply of crude to meet requirements.

Remember 30 Cent Sugar

It has not been so long but that most persons can remember when it was possible to buy 33 pounds of sugar for $1. Contrast that price of 3 cents a pound to the 30 cents a pound paid during the war and during 1920. Eggs at $1 a dozen, butter at $1 a pound and other articles of necessity went to such high prices it was almost impossible for the average family to purchase them. Certain brands of shoes advanced in price to more than three times what they had sold for a few years ago. It is not hard for most men to remember when $25 was a whole lot to pay for a suit of clothes. What can a man get for $25 now in the way of a suit?

Do you remember the old nickelodeons? The name told what they were—5 cent motion picture shows. It has not been so long since practically all motion picture shows had a 5 cent admission rate. Now the price is 50 cents in a majority of cases and, in the case of certain pictures, the charge ranges as high as $2. Of course, the motion picture shows of today are much better. The theaters—for they are called theaters now and not shows—are larger, cleaner and more comfortable, the pictures better, and the machines much improved, but at the same time the price has advanced to 10 times what it formerly was.

Gasoline Also Improved

And speaking of improvements, gasoline has improved greatly in quality as well as in the manner of its distribution with little or no appreciable increase in price because of these things. More mileage to the gallon can be procured from gasoline sold today than from that marketed several years ago. Part of this is due to improvements in the engines and carburetors but much of it is due to a much better quality of the gasoline itself. Besides, it is possible now to buy gasoline at almost every corner and cross roads in the United States. This is due to the expenditure of hundreds of millions of dollars for filling stations and pumps and yet this vast expenditure has not been reflected in higher prices for gasoline. There has been no doubling, trebling or more in the price of gasoline as in other products bought daily and in common use.

In this connection did you ever stop to consider the conveniences arranged for the buyers of gasoline, both in the matter of location of service stations and gasoline pumps, the hours these stations remain open for the benefit of the public and the various services which are obtained at these stations without any charge being made for them? When you wish to buy gasoline, you do not have to make any long trip for it as you usually do when purchasing other commodities. You will find filling stations located at convenient points throughout the business and residential sections and along public highways. These stations are located at great expense because of the value of the property on which they are built, property convenient to the main arteries of travel commanding high prices. And gasoline stations are built at places easily accessible.

Convenient Filling Stations

How many grocery stores, meat markets, clothing firms or other businesses remain open at night for the convenience of their patrons? How many operate on Sundays and holidays? At how many such places do you obtain certain services free and how many have rest rooms where you may refresh yourself after a hard drive?

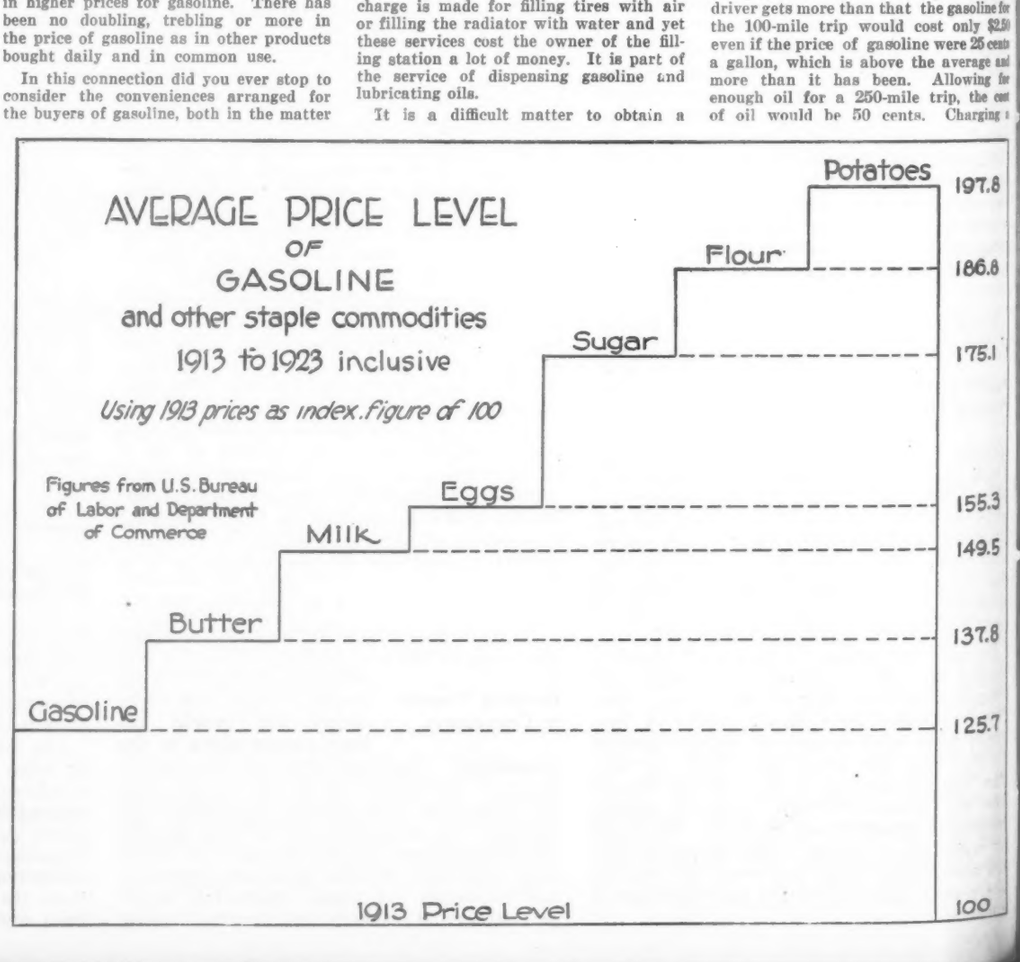
Gasoline service stations are operated on a margin of 2 cents a gallon between the tank wagon price, which is the wholesale price to the retailer, and the service station price, which is the price paid by the automobile owner. The air pumps installed at these stations and water connections cost considerable money. No charge is made for filling tires with air or filling the radiator with water and yet these services cost the owner of the filling station a lot of money. It is part of the service of dispensing gasoline and lubricating oils.

It is a difficult matter to obtain a combination of good service and low prices, but such a combination has been secured in the gasoline industry. The convenience of location of filling stations, the arrangement of these stations so that the purchaser does not even have to get out of his car when he buys gasoline or has air placed in his tires or water in the radiator, and the keeping open at night and on holidays of these filling stations all form a part of the service provided for consumers of gasoline which retailers of groceries, butter, eggs, flour, clothing, building materials and other such products do not provide. And yet, the prices for gasoline show conclusively they have not risen in anything like the proportion of the prices of other commodities.

The low price of gasoline is reflected vividly in the matter of transportation costs. A few years ago the railroad passenger fare rate in a major part of the United States was 2 cents a mile. Since the war the rate has been increased until now the minimum rate is 3.6 cents a mile or an increase of 80 per cent, a greater increase than gasoline experienced during any of the 11 years previously mentioned.

Cheap Transportation

Gasoline is the cheapest motive power for transportation. Suppose a family of five persons desires to take a 100-mile trip on a Sunday, or at any other time for that matter. They have an automobile. Allowing only 10 miles to the gallon and almost every automobile driver gets more than that the gasoline for the 100-mile trip would cost only $2.50 even if the price of gasoline were 25 cents a gallon, which is above the average and more than it has been. Allowing for enough oil for a 250-mile trip, the cost of oil would be 50 cents. Charging a



maximum amount for depreciation and repairs would add another $1 to the cost of the trip while allowing for insurance, the cost of license, interest on the original investment and even the daily rate for garage rent the total expenditure, including depreciation, etc., would total only $4.65 for the 100-mile trip for the five persons. The railroad fare for this trip for the family would be exactly $18. The difference is shown in the itemized statement as follows:

Gasoline at 25 cents a gallon	**$ 2.50**
Depreciation and repairs at rate of $365 a year which is very high.	**1.00**
Oil	**.50**
License and insurance on yearly rate	**.15**
Interest on investment in automobile	**.20**
Garage rent for a day	**.30**
Total expense 100-mile trip for family of five persons	**$ 4.65**
Railroad fare same persons, same distance	**$18.00**
Amount saved in making trip by automobile	**$13.35**

How Much Will Gasoline Buy?

The relative cheapness in price of gasoline may be illustrated in another way. How much of anything else can you buy for the price of a gallon of gasoline? It now takes two gallons of gasoline to purchase the same quantity of anthracite coal that could be purchased for one gallon in 1913. It takes more than 1½ gallons of gasoline to buy the same quantity of farm products that one gallon would purchase in 1913. In 1913 the price of a gallon of gasoline would buy 12 pounds of steel f. o. b. Pittsburgh. Now it will buy 6½ pounds. Where it bought 425 pounds of No. 2 buckwheat coal, f. o. b. mines, it today buys 185 pounds. In 1913 the price of one gallon of gasoline would purchase 5 feet of 12-inch merchantable long leaf pine lumber. Today it would buy just half as much.

Costs of labor and equipment necessary in the manufacture of gasoline have advanced as in other lines of business. Vast quantities of iron and steel are used in refineries which make gasoline and these products have increased greatly in price. Practically every item entering into the business of refining crude petroleum has increased in price. The increases have been about the same as in many other lines of business because the refining industry uses so much of the same kind of material as is used in other business such as iron, steel, lumber, valves, fittings, castings, engines,, boilers, tubing, recording instruments, etc. Labor, also, has increased in a like proportion with other lines of industry. Yet these increased costs have not been reflected in such increases in prices for refined oil products as have characterized other commodities as is proved by the Government figures on prices.

Hence, Why an Investigation?

Consequently, is it any wonder that the man on the street, the citizen who has no ax to grind and attends to his own affairs, and the millions of persons throughout the country who form the backbone of this nation's citizenship and are known as the "general public"—is it any wonder that this great part of the population in general view the present agitation against the oil industry as nothing more than political propaganda? They fail to see why an industry which has kept prices lower than any other commodity in general usage should be singled out for investigation unless it be for some ulterior motive.

Note—A graph showing the trend of prices of gasoline, butter, eggs, milk, potatoes, flour, sugar, household furnishings, clothing and other commodities will be found on the page immediately following this.

COMPARISON OF INDEX PRICES OF INDICATED COMMODITIES

By Years, 1913 to 1923, Inclusive

1913 PRICE LEVEL, 100
Compiled From Bureau of Labor and Department of Commerce Statistics

Year	All Commodities	Gasoline	Housefurnishing Goods	Building Mater'ls	Cloth & Clothing	Farm Products	Eggs	Sugar	Butter	Potatoes	Milk	Flour
1913	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
1914	98	**83**	100	92	98	103	103.3	110.3	93.6	112.8	93.9	111.2
1915	101	**75**	100	94	98	104	100.6	130.2	92.5	74	94.8	145.4
1916	127	**121**	106	120	127	123	115.9	161.1	106.4	180.8	102.3	158.5
1917	177	**132**	125	157	175	190	161.6	180.6	134.3	313	143.1	248.5
1918	194	**139**	153	172	228	218	196.2	182.4	162.5	158.3	174.9	-----
1919	206	**142**	184	201	253	231	214.7	209.4	190.7	232.3	190.5	261.8
1920	226	**170**	254	264	295	218	228.4	296.7	189.2	424.2	191.4	276.5
1921	147	**143**	195	165	180	124	160	144.3	133.7	174.8	168.8	181.6
1922	149	**140**	176	168	181	133	133.7	139.1	128.2	165.3	164.3	158.9
1923	154	**112**	183	189	200	141	139.3	197.7	148.3	142.4	171.6	139.3

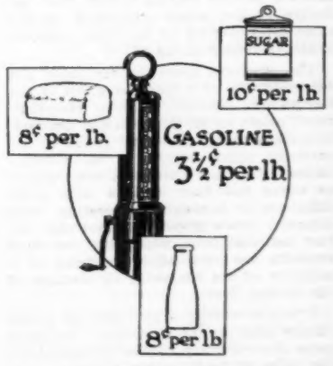
By Months, 1921 to January, 1924, Inclusive

1913 PRICE LEVEL, 100
Compiled From Bureau of Labor and Department of Commerce Statistics

Month	Year	All Commodities	Gasoline	Housefurnishing Goods	Building Mater'ls	Cloth & Clothing	Farm Products	Eggs	Sugar	Butter	Potatoes	Milk	Flour
January	1921	177	**177**	217	192	196	143	264.8	177.3	158.5	127	191.6	210
February	"	167	**160**	217	180	188	133	155.7	166	148.9	111.1	162.8	200.3
March	"	162	**154**	216	173	183	127	119.8	183.6	150.4	119.2	140.2	190.5
April	"	154	**151**	216	167	176	117	105.6	169.8	139.2	97.1	104.2	173.4
May	"	145	**141**	209	165	173	118	96.7	148	92.2	136.9	149.9	190.8
June	"	142	**137**	196	163	172	114	106	133.3	99.5	160.1	133	196.5
July	"	141	**132**	180	160	172	119	126.2	127.9	124.3	241.7	150.3	194.2
August	"	142	**129**	179	156	171	123	133.7	136.5	128.6	303.8	178.6	177.1
September	"	141	**124**	179	156	178	124	147.5	130.9	130.2	249.7	178.6	181.5
October	"	142	**129**	180	159	180	124	194	121.5	143.3	185.6	200.7	162
November	"	141	**137**	178	163	180	121	232.5	121.1	139.9	175.8	200.7	156.4
December	"	140	**140**	178	158	180	120	224.8	117.1	140.4	180.7	200.7	150.1
January	1922	148	**137**	178	157	183	116	163	112.4	111.6	202.2	187.6	152.7
February	"	151	**135**	177	156	174	126	139.8	115.2	119.4	193.5	182.6	174
March	"	152	**136**	175	155	182	128	100	120.8	121.7	172.2	160	170.4
April	"	148	**139**	175	156	171	129	103.1	121.5	122.1	156.9	149.2	177.7
May	"	148	**148**	176	160	175	132	106.4	123.4	112	219.8	122.8	175.8
June	"	150	**151**	176	167	179	131	98.7	137.2	115.2	292.4	122.8	163.6
July	"	155	**151**	173	170	180	135	194.1	153.9	114.1	204.5	145.4	169 9
August	"	155	**142**	173	172	181	131	97.4	157.6	110.4	143.1	167.9	152.6
September	"	153	**142**	173	180	183	133	129.3	146.4	127.5	119.7	178.1	138.4
October	"	154	**136**	176	183	188	138	153.2	154.3	144	89.4	178.1	140.4
November	"	156	**128**	179	185	192	143	214.3	159.7	161.4	84.2	178.1	146.4
December	"	156	**127**	182	185	194	145	210.4	162.3	173.4	108.1	200.7	147.8
January	1923	156	**124**	184	188	196	143	168.7	157.8	162	93.8	189.8	144.6
February	"	157	**129**	184	192	199	142	147	170.7	161.1	96.5	178.1	146.4
March	"	159	**132**	185	198	201	143	115.7	200.7	158.7	107.4	173.6	144.5
April	"	159	**128**	187	204	205	141	112	214.5	145.3	129.4	173.6	151.8
May	"	156	**121**	187	202	201	139	108.2	220.4	129.7	169.1	151	146.6
June	"	153	**125**	187	194	198	138	100.5	215.2	126.4	184.2	151	136.6
July	"	151	**124**	187	190	193	135	100.8	199.1	123.1	221.4	151	131.4
August	"	150	**110**	183	186	193	139	115	178	138.1	218.5	162.8	133.1
September	"	154	**97**	183	182	202	144	137.9	192.7	145.6	167.3	181.9	136.1
October	"	153	**91**	183	182	199	144	156.1	210.1	149.3	108.4	188.7	135.3
November	"	152	**84**	176	181	201	146	214.3	202.6	165.9	101.3	184.9	131.7
December	"	151	**84**	176	178	203	145	187.8	207	172	105	173.6	133.1
January	1924	151	**97**	176	181	200	144	179.9	196.3	168.7	140.2	155.5	135.2

IF GASOLINE WERE SELLING BY POUND

If gasoline were selling by the pound, it would be costing around 3½ cents per pound. There is no other commodity of



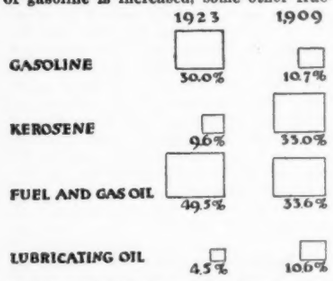
general use which can be obtained at anything like that price. There is no other commodity produced under similar conditions which is so available and so useful to the American public.

FINDING OIL A LOTTERY

The finding branch of the petroleum industry standing alone as distinguished from the producing, refining and other branches of the industry, is not a business, nor is it a science—it is a speculation, a lottery. The United States contains 2,000,000,000 acres of land. Of this amount, 2,000,000 acres, so far, have produced oil in commercial quantities. The prospector who is not led by signs or science, but just goes out and "sticks 'er down," has, therefore, had about one chance in a thousand of striking oil.—E. W. Marland.

DEEPER CUTS IN CRUDE TO SUPPLY GASOLINE

To supply the demand for gasoline, petroleum refiners are cutting deeper and deeper into the barrel of crude oil. Every scientific method known to the trade is being devoted to increase the yield of gasoline from crude oil. When the yield of gasoline is increased, some other fraction of the crude oil must be drawn upon. This is shown in percentage figures giving the yields of principal products from all crude oil run by refineries in the United States in 1923 as compared with 1909.



The figures showing the gasoline yield for 1923 are the more remarkable when it is considered that the handling of large quantities of Mexican crude oil which have but a small gasoline content.

Swing of Prices On Gasoline and Other Commodities

The following table was prepared with the view of ascertaining the truth of the contention that retail gasoline prices vary more than other widely used commodities. The table is proof of the falsity of the assertion sometimes heard from those who state that gasoline retail prices are manipulated because of the fact that they are not uniform in all parts of the United States.

The retail prices given in the table, with the exception of gasoline, were taken from the Monthly Labor Review (February, 1924) of the Bureau of Labor statistics and are the latest available. The gasoline service station prices were effective at the points mentioned on the same dates covered for the other products in the Government report.

The products given in the table are representative of a long list given in the Government reports. Without exception, retail prices on all the principal commodities show widely divergent prices at the scattered points covered in the monthly tables. The fact that such commodities as sugar and flour show a wide price difference is especially interesting. This disparity exists despite the fact that the raw material from which the two food products are obtained is produced in a majority of the States in all sections of the United States.

It is also worthy of note that the prices change from month to month. In many cases there is sharp decline or advance in the price of foods within a period of a few weeks. This fact is especially noticeable in the case of oranges, which declined at several points from 5 to 10 cents in the November 15 and December 15 reports.

Attention is also called to the wide variance in bituminous coal prices which in the December 15 report varied from $4.50 at Springfield, Ill., to $16.90 a ton at San Francisco, Cal. The explanation offered and accepted for this lack of price uniformity in the case of coal and other products is based on the varying costs entering into their delivery to the consumer at the widely separated consuming centers. A study of the data given elsewhere in this issue dealing with the varying costs entering into the production and transportation of gasoline explains the fundamental conditions within the oil industry which determine the retail prices.

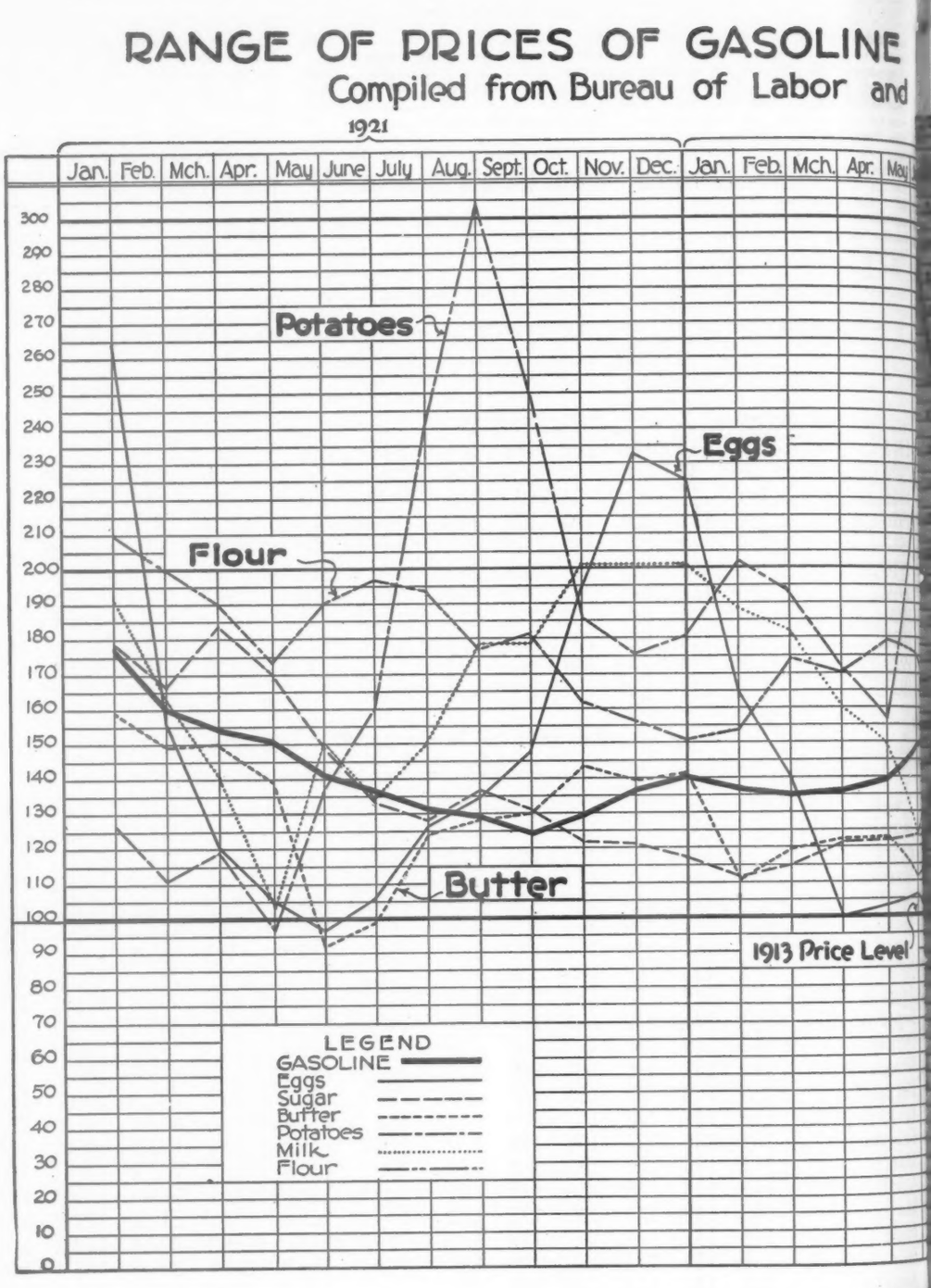
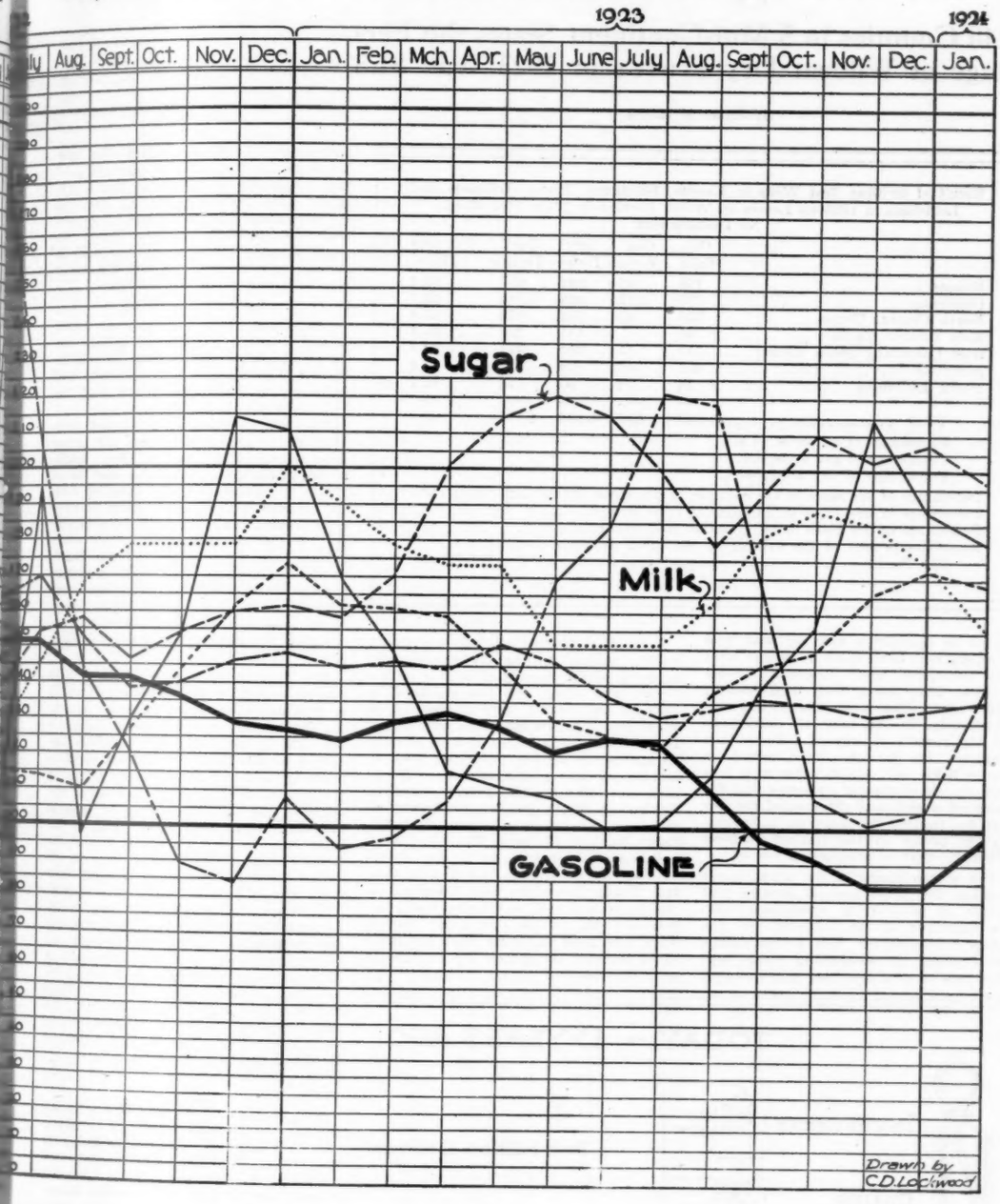

RANGE OF PRICES OF GASOLINE
Compiled from Bureau of Labor and
1921
Jan. Feb. Mch. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mch. Apr. May
300 290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
Potatoes
Eggs
Flour
Butter
1913 Price Level
LEGEND
GASOLINE
Eggs
Sugar
Butter
Potatoes
Milk
Flour

TABLE CONTAINING THE RETAIL PRICES

(Compiled from statistics

	Sirloin Steak Per Lb.		Sugar Per Lb.		Bituminous Coal Per Ton		Flour Per Lb.		Oranges Per Doz.		Gasoline Serv. Stations		Ins. Tax
	Nov. 15	Dec. 15	Nov. 15	Dec. 15	Nov. 15	Dec. 15	Nov. 15	Dec. 15	Nov. 15	Dec. 15	Nov. 15	Dec. 15	
Atlanta	35.0c	34.4c	10.8c	11.0c	$8.25	$8.14	5.2c	5.2c	37.2c	37.5c	18.0c	18.0c	3c
Baltimore	37.0	36.8	9.7	10.0	8.15	8.00	4.3	4.3	47.0	40.1	19.0	19.0	1
Boston	62.7	61.5	10.3	10.5	....	.....	5.0	5.0	56.0	40.1	17.0	17.0	
Buffalo	36.7	36.5	10.0	10.0	....	.....	4.0	4.0	54.0	48.4	17.5	17.0	
Butte	27.0	26.9	12.5	12.7	11.16	11.39	4.9	4.9	51.0	43.2	22.0	22.0	2
Chicago	40.7	40.9	9.4	9.6	8.75	8.71	4.1	4.1	56.1	42.6	14.0	14.0	
Cincinnati	34.1	34.1	10.2	10.1	8.39	8.14	4.4	4.4	41.8	33.0	18.0	18.0	
Denver	28.3	28.6	11.0	11.1	10.68	10.68	3.7	3.6	53.8	45.2	15.0	15.0	2
Detroit	36.4	36.3	9.8	9.9	9.91	9.80	4.1	4.2	56.3	47.7	12.8	12.8	
Indianapolis	35.8	35.0	10.4	10.4	7.48	7.05	4.4	4.4	48.6	40.3	16.2	16.2	2
Jacksonville	34.1	33.9	10.7	10.8	11.00	11.42	5.4	5.4	31.7	27.9	18.0	18.0	3
Kansas City	37.7	37.8	10.4	10.5	8.54	8.56	4.2	4.5	51.0	46.9	13.9	13.9	1
Little Rock	32.1	31.4	11.3	11.2	11.50	11.42	5.1	3.7	46.5	38.2	18.5	18.0	3
Los Angeles	34.9	34.3	10.5	10.6	15.50	15.50	4.6	4.5	40.0	41.5	15.0	15.0	2
Louisville	31.0	30.0	10.6	10.6	8.54	8.50	4.9	4.9	35.6	34.3	16.0	16.0	1
Minneapolis	27.8	29.0	10.0	10.3	11.75	11.63	4.2	4.3	53.2	48.3	14.9	14.9	
New Orleans	30.2	31.4	9.7	9.8	11.16	11.44	5.4	5.5	39.0	39.1	14.5	14.5	1
New York	42.6	42.3	9.7	10.0	....	.....	4.5	4.7	61.3	49.7	18.0	18.0	
Omaha	35.7	36.2	9.7	10.2	10.86	10.86	3.8	3.8	45.9	40.9	14.25	14.25	

AND STAPLE COMMODITIES
Department of Commerce Statistics



SOLINE WITH THOSE OF OTHER COMMODITIES

ed States Bureau of Labor)

	Sirloin Steak Per Lb. Nov. 15	Sirloin Steak Per Lb. Dec. 15	Sugar Per Lb. Nov. 15	Sugar Per Lb. Dec. 15	Bituminous Coal Per Ton Nov. 15	Bituminous Coal Per Ton Dec. 15	Flour Per Lb. Nov. 15	Flour Per Lb. Dec. 15	Oranges Per Doz. Nov. 15	Oranges Per Doz. Dec. 15	Gasoline Serv. Stations Nov. 15	Gasoline Serv. Stations Dec. 15	Inc. Tax
Philadelphia	43.6	43.8	9.6	9.9	....	.....	4.6	4.6	48.9	46.7	20.0	19.0	2
Pittsburgh	43.2	42.8	10.3	10.5	7.54	7.54	4.4	4.4	55.5	45.2	20.0	19.0	2
Portland, Me.	57.6	46.9	10.3	10.6	....	.....	4.5	4.5	49.7	39.7	19.0	19.0	3
Portland, Ore.	27.5	27.8	10.4	10.7	14.00	14.11	4.1	4.1	50.8	42.8	18.0	18.0	
St. Louis	35.0	35.1	10.0	10.2	7.26	7.23	4.2	4.2	43.0	40.4	13.9	13.9	½
San Francisco	30.6	31.6	10.2	10.3	16.90	17.40	4.8	4.8	55.7	46.2	16.0	16.0	2
Seattle	30.4	30.1	10.6	10.8	10.35	10.25	4.2	4.2	51.6	42.6	16.0	16.0	1
Washington	44.1	42.8	10.0	10.0	8.87	8.87	4.8	4.8	46.8	39.9	18.0	18.0	2½
Salt Lake City	25.9	26.0	11.0	11.1	8.74	8.87	3.3	3.3	40.0	37.4	21.0	20.0	
Springfield, Ill.	31.2	32.2	11.0	11.4	4.70	4.50	4.7	4.6	58.8	51.8	14.2	14.2	
High	62.7	61.5	12.5	12.7	$16.90	$17.40	5.2	5.5	61.3	49.5	*20.0	*20.0	
Low	25.9	26.0	9.4	9.6	$ 4.70	4.50	3.3	3.3	31.7	27.9	*12.8	*12.8	

*High and low prices for gasoline do not include tax. These taxes, in all cases, should be subtracted from service station prices in making comparisons.

Note: In Boston and Portland, Me., the steak for which prices are quoted is known as sirloin steak, but in other cities it would be called Porterhouse steak. The quotations for coal for Boston, Buffalo, New York City, Philadelphia and Portland, Me., are omitted because the bituminous prices are not given at those points.

Speaking of Spreads Consider Some Other Articles Used Daily

People, uninformed, talk glibly of the supposed enormous "spread" between crude oil and what the customer at the filling station pays for gasoline. The exact statements in this issue following the crude through all stages to the ultimate consumer in his car is a sufficient refutation of such talk, but, just by way of comparison, let the critic of the oil industry ponder upon the "spread" in some other commodities he uses daily.

Consider coffee, for instance. The average price per pound for coffee imported in 1900 was 8.9 cents, in 1910, 7.9 cents; in 1911, 10.3 cents; over 13 cents in 1912 and 1913; 11 cents in 1914, 9.6 cents in 1915 and 1916; 10 cents in 1917, 9.02 cents in 1918, 13.7 cents in 1919 and 21.9 cents in 1920, 13.1 in 1921 and 11.8 cents in 1922.

Any housekeeper can compare these prices with the prices she paid during those years.

Take eggs, for example. The town chicken raiser can keep posted on the daily variations in the market and by advertising his genuinely fresh eggs to his customers get the highest price. But what of the farmer's wife out in the country who has to take what she is offered in a community where eggs are plentiful and prices down to bedrock? The public is fairly familiar with the cold storage egg and the methods by which that system has been used to pile on the "spread" between the farmer's wife and the city consumer. Occasionally some curious woman packs a note in an egg box telling the ultimate consumer what she received for those eggs of a year or so back so he can contrast it with what he has been charged for them. And the result is generally mutually shocking!

Investigations by consumers' associations have shown how cents at a time have been added in rapid succession to the price of eggs by buyers of storage eggs who never saw them and never had anything to do with them except buy them "sight unseen" and sell them to the next speculator.

There is nothing of that sort in the oil or gasoline business.

OIL WELLS THAT MAKE THE WHEELS GO ROUND

To keep the motor cars, the ships, the locomotives, the industries, the wheels of all machinery that depend in any way upon petroleum going, 300,000 wells are producing oil.

The magnitude of this figure may be appreciated and its significance as regards the vastness of the investment and operations of the American oil industry is apparent when it is realized that few foreign oil producing countries have as many as 1,000 producing wells.

American leadership in oil is maintained by the pioneer spirit, business initiative and scientific skill symbolized by this great aggregation of wells.

CANNOT CONTINUE AT LOSS

I am here to tell the American people that sooner or later, somehow, in some manner, no matter what they do, no matter what you do, no matter what anybody does, they will have to pay more for their gasoline than they are now paying or this great industry can't perform the functions of supplying a necessary product for our industrial life.—Thomas A. O'Donnell, before American Petroleum Institute, December, 1923.

GASOLINE'S CHALLENGE

Name, if you can, another manufactured article that is maintained at such a high standard, that is so widely and regularly distributed, that is dispensed at so narrow a margin of profit to the producer as gasoline.—A. C. Bedford.

Hazards of Drilling for Crude Petroleum

In 140 Counties in 5 Mid-Continent States the Percentage of Wildcat Dry Holes in 1923 Was 81.3

By James McIntyre

Every field in the United States was opened by a wildcatter.

Any well drilled a considerable distance beyond a producing area is a wildcat. Such wells, otherwise known as "tests" or exploration wells were dubbed "wildcats" in the early days of the oil producing business when drilling was centered in western Pennsylvania, then a region of forest lands. The first work was done near the towns close to the Allegheny River, on farms which had been cleared of timber. As the zone of operations spread, oil men went back into the wilderness and drilled wells. It became a saying that So and So was drilling "back among the wildcats." Soon the trade began to call the tests themselves wildcats and the owners of them wildcatters. The names have remained and become a part of a vast oil region vernacular.

To the wildcatter, the man, or group of men, or company, courageous enough to risk a large sum of money on the very uncertain venture of drilling for oil with the law of averages very much against success, the consuming public owes a debt of gratitude.

The consuming public has little or no share in the all too frequent failures of the wildcatter, while sharing largely in the beneficent results of his infrequent successes.

The wildcatter made the automobile possible. He has incalculably benefited manufacture and commerce. He has assisted the progress of the arts. He has helped medicine. On land and sea the results of the wildcatter's nerve and optimism may be seen in ships propelled by oil and railroad trains drawn by locomotives fired with oil, great manufacturing plants using oil as fuel; public buildings and private homes made comfortable in the coldest weather by the new wonder fuel, roads paved with asphalt, houses heated and lighted by natural gas or kerosene.

Every oil field had a beginning. A wildcatter began it. Dr. Drake back in 1859 was the original wildcatter.

He "Takes His Chances"

The wildcatter knows the chances against him when he starts a well on a tract of land where no other well has been drilled, but the quality of his courage is such that he is willing to assume the financial hazard in the hope of a big reward, commensurate with the risk.

If he is a practical oil man he selects the land to be explored with the drill after careful consideration of all the elements that go to make a drilling location appear favorable. Years ago there was a deal of hit and miss, and little of science, in the choice of drilling locations. In recent years the aid of the petroleum geologist has been consistently sought and most properties drilled have been surveyed by one or more geologists who reported the existence of a "structure" capable of holding oil. The geologist can make no better promise than this. He makes a report which, stripped of its technical language, is either favorable or unfavorable. He tells the oil man that he may find oil, or he tells him there is no chance of finding it. He never tells him positively that he will "strike oil." There is only one way of determining that, which is to drill deep enough to penetrate all the possibly oil bearing formations which the geologist has reported as underlying the surface.

Now, what is the wildcatter's chance of finding oil? Some say one chance in five, on the general law of averages. The writer and every oil man knows of men who have spent a fortune in a vain endeavor to discover a new oil pool, and of others who have spent a fortune with only occasional small successes. Some of these have spent their own money; others spent other men's money, but conscientiously, in the hope of sharing in the big reward if success followed the ventures. On the other hand, men have opened fields and won fortunes in a first venture. It is the big successes and the resultant wealth and affluence of the few that has spurred the many on to hazarding big money in the riskiest business on earth—that of prospecting for oil.

The writer knows of no exact figures showing the percentage of success and failure in wildcatting operations since the beginning of the industry, but the tables accompanying this article, while not confined to wildcatting alone, will show results as of last year in five States.

Result of Drilling Test Wells in Kansas, Oklahoma, Texas, Arkansas and Louisiana in 1923 on Leases on Which Previously There Had Been No Development

	Oil Wells	Gas Wells	Dry Holes	Total Drilled	Pct Dry Holes
Kansas	174	42	391	607	64.4
Oklahoma	730	217	938	1,885	49.7
North Central Texas	350	42	487	879	55.4
East Central Texas	93	...	115	208	55.3
Gulf Coast and South Texas	147	17	207	371	53.8
Arkansas	451	46	159	656	24.2
North Louisiana	14	74	85	173	49.1
Total	1,959	438	2,382	4,779	49.8

Percentage of oil wells, 41.4.
Percentage of gas wells, 8.8.
Percentage of dry holes, 49.8.

Percentage of dry holes in 111 counties in the above States (225 tests) 100.0
Percentage of dry holes in 29 counties (614 tests) 73.7
Percentage of dry holes in 140 counties (859 tests) 81.3
Approximate cost of the drilling of the 2,382 dry hole tests in the five States $35.730.000

Instead of picking out the results of strictly wildcat drilling the writer made a search of the records of a year to ascertain how many new leases drilled in 1923 in five States were productive of oil or gas. No new lease was overlooked. It mattered not whether it was directly up against an already producing lease or far beyond any producing zone. Every lease developed in the Powell Field in Texas, one of the greatest producing regions in the oil world, was included. Every lease in Burbank, Tonkawa, Bristow and all other fields in the five States of Kansas, Oklahoma, North and Central Texas, Louisiana and Arkansas on which the first well was drilled last year, was included in the search for results. This was done in order that no critic could say that the search had been made with the object of merely showing a high percentage of failures. Had the new leases in the big oil fields been excluded the percentage of oil wells would certainly have been considerably less and the percentage of failures more, but even with the inclusion of these leases, on which success was practically assured in advance, the results will surprise many people in and out of the industry.

4,779 Leases Tested

Leaseholds to the number of 4,779 bought for the purpose of drilling for oil or gas, were tested with the drill in Kansas, Oklahoma, Texas, Louisiana and Arkansas in 1923, and nearly half the test wells drilled were dry.

In most cases these leases had been acquired on geological advice that there was a reasonable chance they might prove productive. In every case there was a conviction that the chance of finding oil was sufficiently favorable to warrant spending all the way from $3,000 to $100,000 to drill a test; yet practically half the wells, (49.8 per cent) proved failures, in many cases condemning the leases altogether and in some instances condemning neighboring leases, or at least lessening their value and increasing the financial hazard of drilling them.

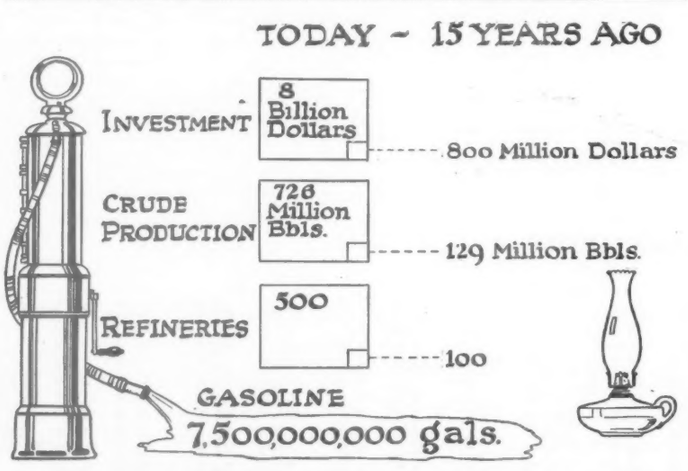
The results set forth in this article and in the accompanying tables, which go into detail, were arrived at by searching the monthly report of field operations for 1923 in the States named which appeared in The Oil and Gas Journal. The monthly field report gives the name of the owner of every completed well; the name of the farm on which the well is drilled; the number of the well on the farm or lease, the amount of initial, or first-24-hours production, if it is an oil well, or a notation that it is a dry hole or a gas well where such is the case. The States of Kansas, Oklahoma, Texas, Louisiana and Arkansas were chosen for the purpose of this article because of their prominence and the fact that a preponderance of field work is carried on in the territory they occupy. This monthly field report is accepted as the sole authority on general oil field results by United States Government bureaus; by the industry generally and by petroleum economists and statisticians the world over.

The purpose of the search was to ascertain the average chance of "striking oil" on a lease on which there had been no previous drilling. As the first well drilled on a lease is known as "No. 1," it was easy to pick out from the thousands of wells completed the test wells finished in the course of the 12 months.

All Dry Holes in 111 Counties

In 111 counties in the five States nothing but dry holes were drilled, 245 expensive failures in all. Eleven counties in Kansas were given 23 tests, all of which were dry. Twenty Oklahoma counties were explored and 37 wildcat dry holes resulted. In 14 North and Central Texas counties, 46 dry holes were drilled and no oil or gas found. In 13 East Central Texas counties, 27 wildcats were drilled with no showing of either oil or gas. Thirty-three counties in the Gulf Coast, South Central Texas and Southwestern Texas were tested out with 68 wells and all of them were barren of oil or gas. In 13 Arkansas counties, 24 wildcats were drilled, only dry holes resulting. Seven North Louisiana counties or parishes were given 20 drilling tests, all of which were dry.

In 29 other counties in the various States under consideration the percent-



Fifteen years ago the principal business of the oil industry was to supply kerosene. Gasoline was virtually a waste product.

If there had been in existence fifteen years ago the number of automobiles manufactured now in one year, they could not have operated, because the oil refining industry could not have produced the necessary gasoline to run them. Even had the gasoline been produced, the facilities at that time for storage, transportation and distribution would have completely broken down.

The growth of the automobile has meant a complete revolution of the effective service which the petroleum industry performs, the production of undreamed of quantities of crude oil and the investment in plants, equipment and facilities of billions of dollars essential for the performance of that service.

age of dry holes was more than 66. There were 614 tests drilled in the 29 counties with the following results: Oil wells, 120 or 19.5 per cent; gas wells, 41 or 6.8 per cent; dry holes, 453, or 73.7 per cent.

Add the result of the wildcat drilling in the 29 last mentioned counties to that in the 111 counties in which there were nothing but failures and we have the following rather startling totals and percentages from 859 tests in 140 counties: Oil wells, 120, or 13.9 per cent; gas wells, 41, or 4.8 per cent; dry holes, 698, or 81.3 per cent.

A brighter picture is presented when results in some of the counties where big fields are located are shown. In Osage County, Oklahoma, in which most of the Burbank Field lies; Kay County, Oklahome, where the Burbank Field extension and the Tonkawa Field extension are located; Navarro County, Texas, the home of the Powell Field, and Union and Ouachita counties in Arkansas, where the Smackover Field is situated, 998 new leases were tested out last year and the "No. 1" or test wells showed 65.5 per cent of oil wells; 6.1 per cent gas wells and 28.4 per cent dry holes. The oil wells as a rule were "inside" wells and the dry holes wildcat or "outside" tests.

The accompanying tables show the result of test well drilling in 1923 by States and counties.

It has already been said that nearly half the tests were dry and failures. The record shows a percentage of only 41.4 per cent of oil wells; 8.8 per cent of gas wells and 49.8 per cent of dry holes.

Of the five States Kansas showed the highest average of dry holes. On 607 new leases only 28.7 per cent of the "No. 1" or test wells were productive of oil; 6.9 per cent were gas wells and 64.4 per cent were dry holes.

In Oklahoma 1,885 leases were tried out with the drill and the test wells showed 38.8 per cent of oil wells; 11.5 per cent gas wells and 49.7 per cent dry holes.

North Central Texas operators tried out 879 new leases and the percentage of oil wells was 39.8 and gas wells, 4.8, while 55.4 per cent of the tests were dry.

In East Central Texas, where last year the sensational Powell Field, which produced 30,000,000 bbls. of oil in seven months, was developed, only 44.7 per cent of the 208 No. 1 wells drilled were oil wells and 55.3 per cent were dry holes. Practically all the oil wells in this accounting were in the Powell Field but many dry holes were drilled in trying to find extensions to the Powell area.

The Gulf Coast area of Texas and Louisiana and South Central Texas and southwest Texas counties saw the completion of 371 tests, of which 39.6 per cent were oil wells; 4.6 per cent were gas wells and 53.8 per cent were dry.

North Louisiana operators completed 173 "No. 1" wells last year, resulting in only 8.1 per cent of oil wells; 42.8 per cent gas wells and 49.1 per cent dry holes.

Arkansas, thanks to the great Smackover Field in which many new leases were successfully developed last year, had the highest percentage of oil wells in the group of States. There were 656 test or "No. 1" wells drilled of which 68.8 per cent were oil wells; 7 per cent gas wells and 24.2 per cent dry holes. Outside the counties in which the Smackover, El Dorado and Stephens fields are located only four oil wells resulted from 43 tests drilled.

Results of Drilling Test Wells in Oklahoma in 1923 on Leases on Which Previously There Had Been No Drilling

County—	Oil Wells	Gas Wells	Dry Holes	Total Tests	Pct. Dry Holes
Washington	4	4	12	20	60.0
Nowata and Rogers	15	6	23	44	52.3
Osage	103	10	80	193	43.5
Tulsa	25	17	47	89	52.8
Okmulgee	54	19	88	161	54.7
Muskogee and Wagoner	17	2	42	61	68.5
Okfuskee, McIntosh, Seminole and Hughes	71	41	137	249	55.0
Creek	196	31	175	402	41.4
Pawnee	34	4	34	72	47.2
Payne	7	2	12	21	57.1
Kay	62	5	42	109	38.5
Garfield and Noble	18	0	27	45	60.0
Carter	54	3	28	85	32.9
Stephens and Cotton	26	20	51	97	52.6
Caddo	5	0	12	17	70.6
Garvin	22	2	24	48	50.0
Grady	8	45	41	94	43.6
Pontotoc	1	0	5	6	83.3
Tillman	0	0	4	4	100.0
Harmon	0	0	1	1	100.0
Beckham	6	3	6	15	40.0
Custer	0	0	1	1	100.0
Pottawatomie	0	0	1	1	100.0
Coal	0	0	1	1	100.0
Johnson	0	0	1	1	100.0
Bryan	0	0	1	1	100.0
Grant	1	1	7	9	77.8
Pushmataha	0	0	1	1	100.0
Lincoln	1	1	3	5	60.0
Kiowa	0	0	4	4	100.0
Sequoyah	0	1	2	3	66.7
Atoka	0	0	1	1	100.0
McClain	0	0	3	3	100.0
Love	0	0	8	8	100.0
Blaine	0	0	1	1	100.0
Jefferson	0	0	3	3	100.0
Tillman	0	0	4	4	100.0
Harper	0	0	1	1	100.0
Woodward	0	0	1	1	100.0
Kingfisher	0	0	1	1	100.0
Washita	0	0	1	1	100.0
Comanche	0	0	1	1	100.0
Marshall	0	0	1	1	100.0
Total	730	217	939	1,886	49.8

Percentage of oil wells, 38.7.
Percentage of gas wells, 11.5.
Percentage of dry holes, 49.8.

Results of Drilling Test Wells in Kansas in 1923 on Leases on Which Previously There Had Been No Drilling

County—	Oil Wells	Gas Wells	Dry Holes	Total Tests	Pct. Dry Holes
Butler	26	7	86	119	72.3
Marion	1	0	12	13	92.3
Chautauqua and Elk	7	9	21	37	56.8
Greenwood and Woodson	99	3	129	231	55.8
Montgomery and Wilson	1	4	8	13	61.5
Neosho and Allen	2	1	3	6	50.0
Franklin and Miami	7	4	25	36	69.4
Cowley	25	7	54	86	62.8
Lyon	2	1	18	21	85.7
Anderson	2	2	8	12	66.7
Bourbon	0	2	0	2	....
Dickinson	0	1	4	5	80.0
Clay	0	0	1	1	100.0
Coffey	0	0	6	6	100.0
Seward	0	1	0	1	....
Reno	0	0	1	1	100.0
Sumner	0	0	4	4	100.0
Kingman	0	0	1	1	100.0
Barbour	0	0	1	1	100.0
Chase	0	0	5	5	100.0
Jewell	0	0	1	1	100.0
Ellsworth	0	0	1	1	100.0
Morris	0	0	1	1	100.0
Harvey	1	0	0	1	....
Comanche	0	0	1	1	100.0
Russell	1	0	0	1	....
Total 12 months	174	42	391	607	64.4

Percentage of oil wells, 28.7.
Percentage of gas wells, 6.9.
Percentage of dry and abandoned, 64.4.

Results in Drilling Test Wells in East Central Texas in 1923 on Leases on Which Previously There Had Been No Drilling

County—	Oil Wells	Gas Wells	Dry Holes	Total Tests	Pct. Dry Holes
Limestone	2	0	35	37	94.6
Navarro	91	0	53	144	36.8
Freestone	0	0	3	3	100.0
Hopkins	0	0	1	1	100.0
Hunt	0	0	2	2	100.0
Van Zandt	0	0	2	2	100.0
Raines	0	0	2	2	100.0
Falls	0	0	1	1	100.0
Kaufman	0	0	5	5	100.0
Henderson	0	0	1	1	100.0
Williamson	0	0	1	1	100.0
Milam	0	0	2	2	100.0
Red River	0	0	3	3	100.0
Cherokee	0	0	1	1	100.0
Anderson	0	0	3	3	100.0
Total	93	0	115	208	55.3

Percentage of oil wells, 44.7.
Percentage of gas wells, 0.
Percentage of dry holes 55.3.

Results of Drilling Test Wells in North Central Texas in 1923 on Leases on Which Previously There Had Been No Drilling

County—	Oil Wells	Gas Wells	Dry Holes	Total Tests	Pct. Dry Holes
Wichita-Wilbarger	32	0	86	118	72.9
Burkburnett	15	1	24	40	60.0
Eastland	56	12	47	115	40.9
Stephens	38	6	30	74	40.5
Young	27	3	51	81	63.0
Shackelford	47	1	16	64	25.0
Palo Pinto	14	10	21	45	46.7
Callahan	10	1	11	22	50.0
Archer	85	0	120	205	58.5
Brown	11	3	16	30	53.3
Montague	0	0	13	13	100.0
Gray	0	0	2	2	100.0
Potter	0	1	0	1	...
Parker	0	0	4	4	100.0
Wise	0	0	1	1	100.0
Hutchinson	2	0	0	2	...
Carson	2	0	0	2	....
Mitchell	7	0	2	9	22.2
Jack	0	0	12	12	100.0
Coleman	1	1	2	4	50.0
Cook	0	0	1	1	100.0
Jones	0	0	1	1	100.0
Clay	3	2	13	18	72.2
Comanche	0	1	2	3	66.7
Wise	0	0	3	3	100.0
Poncho	0	0	1	1	100.0
Johnson	0	0	1	1	100.0
Scurry	0	0	2	2	100.0
Hardeman	0	0	3	3	100.0
Collin	0	0	1	1	100.0
Donnelly	0	0	1	1	100.0
Total	350	42	487	879	55.4

Percentage of oil wells, 39.8.
Percentage of gas wells, 4.8.
Percentage of dry holes, 55.4.

Results of Drilling Test Wells in North Louisiana in 1923 on Leases on Which Previously There Had Been No Drilling

District—	Oil Wells	Gas Wells	Dry Holes	Total Wells	Pct. Dry Holes
Natchitoches Parish	0	0	2	2	100.0
Morehouse Parish	0	21	7	28	25.0
Red River Parish	0	1	2	3	66.7
De Soto Parish	3	2	7	12	58.3
Union Parish	0	0	2	2	100.0

Claiborne Parish	4	0	14	18	77.8
Caddo Parish	5	1	12	18	66.7
Elm Grove Field	0	1	0	1	...
Bienville Parish	0	0	11	11	100.0
Bossier Parish	1	4	9	14	64.3
Ouachita Parish	0	31	0	31	...
Webster Parish	0	11	9	20	45.0
Bellevue Field	1	1	3	5	60.0
Lincoln Parish	0	0	1	1	100.0
Caldwell Parish	0	0	1	1	100.0
Sabine Parish	0	1	2	3	66.7
Union Parish	0	0	2	2	100.0
Jackson Parish	0	0	1	1	100.0
Total	14	74	85	173	...

Percentage of oils wells, 8.1.
Percentage of gas wells, 42.8.
Percentage of dry holes, 49.1.

Results of Drilling Test Wells in Arkansas in 1923 on Leases on Which Previously There Had Been No Drilling

	Oil Wells	Gas Wells	Dry Holes	Total Drilled	Pct. Dry Holes
Union County (Smackover and El Dorado)	243	15	76	334	22.7
Ouachita County (Smackover)	155	31	32	218	14.7
Stephens-Ouachita Counties	49	0	12	61	19.7
Jefferson County	0	0	3	3	100.0
LaFayette County	0	0	2	2	100.0
Miller County	0	0	1	1	100.0
Nevada County	4	0	15	19	75.0
Bradley County	0	0	1	1	100.0
Chicot County	0	0	2	2	100.0
Calhoun County	0	0	2	2	100.0
Drew County	0	0	4	4	100.0
Clark County	0	0	3	3	100.0
Dallas County	0	0	2	2	100.0
Lincoln County	0	0	1	1	100.0
Little River County	0	0	1	1	100.0
Hempsted County	0	0	2	2	100.0
Total	451	46	159	656	24.2

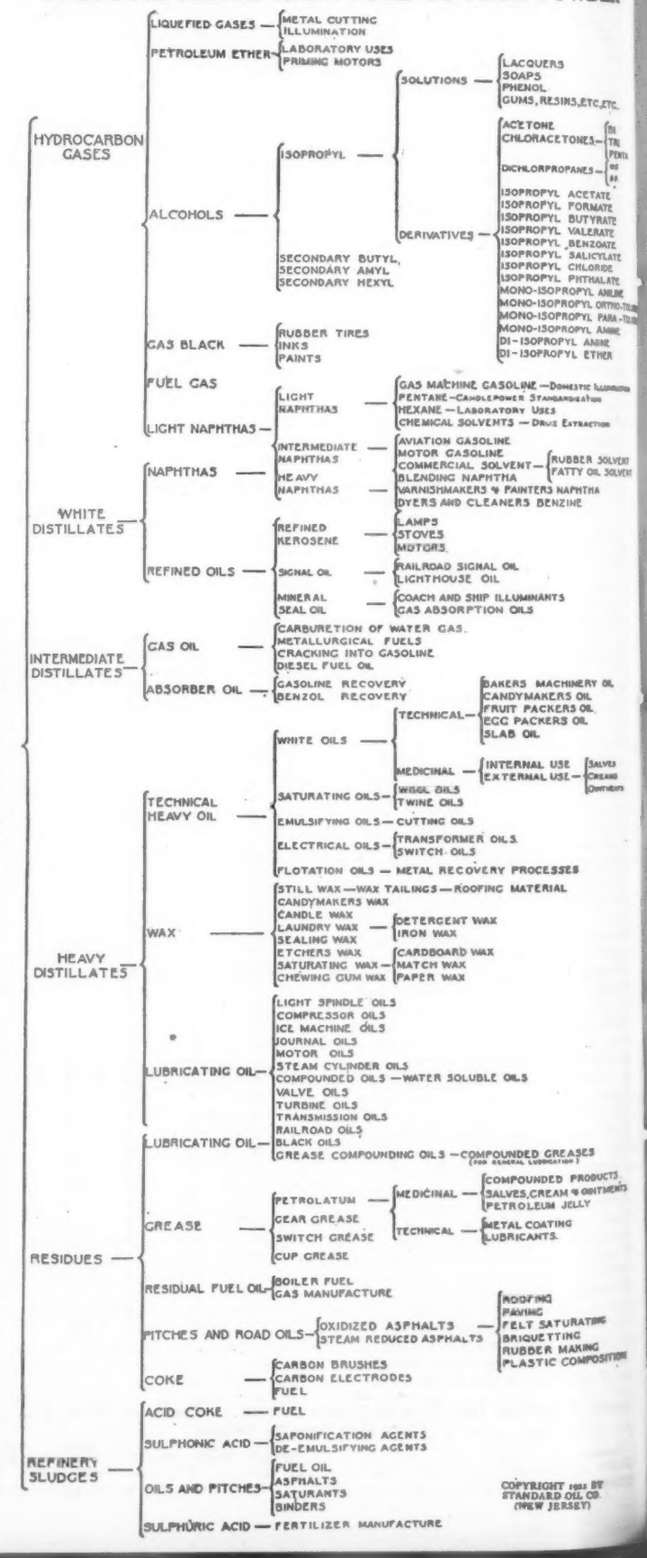
Percentage of oil wells, 68.8.
Percentage of gas wells, 7.0.
Percentage of dry holes, 24.2.

Results of Drilling Test Wells in the Gulf Coast Fields of Texas and Louisiana, and in Southern and Southwest Texas in 1923, on Leases on Which Previously There Had Been No Drilling

District—	Oil Wells	Gas Wells	Dry Holes	Total Wells	Pct. Dry Holes
Batson	1	0	5	6	82.5
Blue Ridge	0	0	1	1	100.0
Barber Hill	6	1	12	19	63.1
Big Creek	0	0	2	2	100.0
Damon Mound	4	0	3	7	42.9
Edgerly	2	0	1	3	33.3
Goose Creek	2	0	5	7	71.4
Humble	5	0	5	10	50.0
Hull	16	2	13	31	41.9
Luling	28	0	7	35	20.0
Orange	7	0	11	18	61.1
Pierce Junction	0	1	9	10	90.0
Spindletop	2	0	4	6	66.7
Sour Lake	3	0	8	11	72.7
Somerset	6	0	0	6	...
Vinton	6	0	9	15	60.0
West Columbia	2	0	3	5	60.0
Markham	0	0	6	6	100.0
Laredo	22	1	2	25	8.0
Milam County	17	3	4	24	16.3
Brazoria County	0	0	8	8	100.0
Caldwell County	3	0	3	6	50.0
Fort Bend County	1	0	7	8	88.9
Harris County	0	0	10	10	100.0
Live Oak County	0	0	2	2	100.0
Montgomery County	0	0	2	2	100.0
Nueces County	0	1	0	1	....
Wharton County	0	0	1	1	100.0
Medina County	3	0	2	5	40.0
Evangeline, La.	0	0	2	2	100.0
Atascosa County	0	1	1	2	50.0
Bexar County	0	1	5	6	83.3
Matagorda County	0	1	5	6	83.3
Webb-Zapata Counties	2	1	1	4	25.0
Austin County	0	0	1	1	100.0
Anderson County	0	0	1	1	100.0
Burleson County	0	0	2	2	100.0
Colorado County	0	0	1	1	100.0
Kleberg County	1	0	1	2	50.0
McMullen County	1	0	1	2	50.0
Calcasieu, La.	0	0	1	1	100.0
El Paso County	0	0	1	1	100.0
Reeves County	0	0	4	4	100.0
South Louisiana	0	0	1	1	100.0
Bastrop County	0	0	1	1	100.0
Gonzales County	0	0	1	1	100.0
Jennings, La.	0	0	3	3	100.0
Houston County	0	0	1	1	100.0
Goliad County	0	0	1	1	100.0
Chambers County	0	0	2	2	100.0
Walker County	0	0	2	2	100.0
Angelina County	4	0	3	7	42.9
Galveston County	3	0	4	7	55.6
Trinity County	0	0	1	1	100.0
Madison County	0	0	1	1	100.0
Wharton County	0	0	2	2	100.0
Liberty County	0	2	2	4	50.0
Live Oak County	0	0	2	2	100.0
Maverick County	0	0	1	1	100.0
Victoria County	0	1	2	3	66.7
Starr County	0	0	1	1	100.0
Washington County	0	0	2	2	100.0
Grimes County	0	1	1	2	50.0
Jackson County	0	0	1	1	100.0
Bayou Boullion, La.	0	0	1	1	100.0
Total	147	17	207	371	58.00

Percentage of oil wells, 39.6.
Percentage of gas wells, 4.6.
Percentage of dry holes, 55.8.

PRODUCTS RANGE FROM FUEL TO FACE POWDER


CRUDE PETROLEUM
HYDROCARBON GASES
LIQUEFIED GASES — METAL CUTTING, ILLUMINATION
PETROLEUM ETHER — LABORATORY USES, PRIMING MOTORS
ALCOHOLS
ISOPROPYL
SOLUTIONS — LACQUERS, SOAPS, PHENOL GUMS, RESINS, ETC. ETC.
DERIVATIVES — ACETONE; CHLORACETONES (DI, TRI, PENTA); DICHLORPROPANES (αα, αβ, ββ); ISOPROPYL ACETATE; ISOPROPYL FORMATE; ISOPROPYL BUTYRATE; ISOPROPYL VALERATE; ISOPROPYL BENZOATE; ISOPROPYL SALICYLATE; ISOPROPYL CHLORIDE; ISOPROPYL PHTHALATE; MONO-ISOPROPYL ANILINE; MONO-ISOPROPYL ORTHO-TOLUIDINE; MONO-ISOPROPYL PARA-TOLUIDINE; MONO-ISOPROPYL AMINE; DI-ISOPROPYL AMINE; DI-ISOPROPYL ETHER
SECONDARY BUTYL, SECONDARY AMYL, SECONDARY HEXYL
GAS BLACK — RUBBER TIRES, INKS, PAINTS
WHITE DISTILLATES
FUEL GAS
LIGHT NAPHTHAS — GAS MACHINE GASOLINE — DOMESTIC ILLUMINATION; PENTANE — CANDLEPOWER STANDARDIZATION; HEXANE — LABORATORY USES; CHEMICAL SOLVENTS — DRUG EXTRACTION
NAPHTHAS
INTERMEDIATE NAPHTHAS — AVIATION GASOLINE; MOTOR GASOLINE; COMMERCIAL SOLVENT — RUBBER SOLVENT, FATTY OIL SOLVENT; BLENDING NAPHTHA
HEAVY NAPHTHAS — VARNISHMAKERS & PAINTERS NAPHTHA; DYERS AND CLEANERS BENZINE
REFINED OILS
REFINED KEROSENE — LAMPS, STOVES, MOTORS
SIGNAL OIL — RAILROAD SIGNAL OIL, LIGHTHOUSE OIL
MINERAL SEAL OIL — COACH AND SHIP ILLUMINANTS, GAS ABSORPTION OILS
INTERMEDIATE DISTILLATES
GAS OIL — CARBURETION OF WATER GAS, METALLURGICAL FUELS, CRACKING INTO GASOLINE, DIESEL FUEL OIL
ABSORBER OIL — GASOLINE RECOVERY, BENZOL RECOVERY
HEAVY DISTILLATES
TECHNICAL HEAVY OIL
WHITE OILS — TECHNICAL — BAKERS MACHINERY OIL, CANDYMAKERS OIL, FRUIT PACKERS OIL, EGG PACKERS OIL, SLAB OIL
MEDICINAL — INTERNAL USE; EXTERNAL USE — SALVES, CREAMS, CONFITURES
SATURATING OILS — WIGGLE OILS, TWINE OILS
EMULSIFYING OILS — CUTTING OILS
ELECTRICAL OILS — TRANSFORMER OILS, SWITCH OILS
FLOTATION OILS — METAL RECOVERY PROCESSES
WAX
STILL WAX — WAX TAILINGS — ROOFING MATERIAL
CANDYMAKERS WAX
CANDLE WAX
LAUNDRY WAX — DETERGENT WAX, IRON WAX
SEALING WAX
ETCHERS WAX — CARDBOARD WAX
SATURATING WAX — MATCH WAX
CHEWING GUM WAX — PAPER WAX
LUBRICATING OIL
LIGHT SPINDLE OILS
COMPRESSOR OILS
ICE MACHINE OILS
JOURNAL OILS
MOTOR OILS
STEAM CYLINDER OILS
COMPOUNDED OILS — WATER SOLUBLE OILS
VALVE OILS
TURBINE OILS
TRANSMISSION OILS
RAILROAD OILS
BLACK OILS
GREASE COMPOUNDING OILS — COMPOUNDED GREASES (NON MINERAL LUBRICATION)
RESIDUES
LUBRICATING OIL — BLACK OILS; GREASE COMPOUNDING OILS — COMPOUNDED GREASES
GREASE
PETROLATUM — MEDICINAL — COMPOUNDED PRODUCTS, SALVES, CREAMS & OINTMENTS, PETROLEUM JELLY
GEAR GREASE
SWITCH GREASE — TECHNICAL — METAL COATING LUBRICANTS.
CUP GREASE
RESIDUAL FUEL OIL — BOILER FUEL, GAS MANUFACTURE
PITCHES AND ROAD OILS — OXIDIZED ASPHALTS, STEAM REDUCED ASPHALTS — ROOFING, PAVING, FELT SATURATING, BRIQUETTING, RUBBER MAKING, PLASTIC COMPOSITION
COKE — CARBON BRUSHES, CARBON ELECTRODES, FUEL
REFINERY SLUDGES
ACID COKE — FUEL
SULPHONIC ACID — SAPONIFICATION AGENTS, DE-EMULSIFYING AGENTS
OILS AND PITCHES — FUEL OIL, ASPHALTS, SATURANTS, BINDERS
SULPHURIC ACID — FERTILIZER MANUFACTURE
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Control Would Eliminate Little Fellow

Any Attempt at Government Regulation Would Result in Small Operators Selling to Larger Companies

By WILLIAM H. GRAY
President, National Association of Independent Oil Producers

There is agitation in many quarters at the present time for some kind of Government regulation of the price of crude and refined oil. There has been a great deal of discussion on the question but as yet these discussions have not taken any concrete form in the way of proposed legislation. I have been asked frequently what the Government could do for the oil producer that would be of benefit to him and the public, and as to what my opinion was as to the effect of any measure creating Government supervision or control over the industry. My answer has always been that the Government could do for the oil industry and the oil producer in particular what it does for every other industry. Give it a square deal on taxation, furnish it the same information and the same assistance that it furnishes the farmer, the cattleman and all other great producing and manufacturing industries.

Any attempt at price regulation and Government control of the industry will destroy the incentive for searching for new pools and eliminate the small operator from the business. Every individual operator in the business is induced to go into it and impelled to stay in it because of its speculative character. Public men who advocate the control of the industry, Government price regulation as a means of securing for the public cheap gasoline, either are ignorant of the fact, overlook the fact, or disregard the fact that every other branch of the oil industry is dependent entirely upon the producing branch. Without production of oil the refinery will fall into decay, the filling station will be of little use, the pipe lines will rust in the ground, the automobile industry will pass away; all of them are dependent entirely upon that restless horde of speculators scattered throughout the length and breadth of the land, searching for that hidden supply of crude oil.

Price a Stimulant

The consumer of refined products is hopelessly at the mercy of a speculative industry. You cannot harvest oil like you do a crop of wheat or cotton each year; you may dig in the ground in the spring but you will not of necessity produce oil from the fruits of your labor in the fall. One year it is a feast and another it is a famine, and the industry must conserve its findings and its discoveries in its years of plenty to tide it over during periods of famine such as the year 1924 promises to be.

Take away from the producing branch of the industry the speculative feature of it and who will care to spend $30,000, $50,000, nay $100,000, in drilling a well which has one chance perhaps in twenty, and if it is a wildcat one chance in five hundred of being a paying producer? How can the Government fix the price of crude oil? It is nonsensical and ridiculous. When they deprive the producing branch of the industry of the speculative feature of it they merely dry up the source of supply. It is the lure of the game of chance which brings the hundreds of millions of dollars each year into the game of searching for oil. Those who win ride in chariots; those who lose are quickly forgotten and ground in the dust of oblivion.

No Certainties in Oil Game

Every well that is drilled is a semi-wildcat; there are no certainties in the game. The brightest of hopes have vanished many times. Oftentimes have I seen men go out in the morning to a well upon a likely looking piece of acreage full of hopes they were going to "drill in" a well; the well was on the sand. They laugh and joke full of joy, expectation and happiness. Arriving on the scene the drillers would start up the drill and there they would remain throughout the day, eagerly watching each foot of sand as it was hauled up in the bailer, taking the sample each time and laying it on a board to dry, their faces stern and drawn, watching and hoping that with each additional foot the well would begin to fill up with oil. After an all day's vigil, in the shadows of the evening, the bailer would be hauled up and in an effort to dump the contents it would be found that the sand would not release itself through the bottom. Every oil man knows what this means. The driller looks at those who had put their money into the hole and says unfeelingly "water." No oil in the sand? "No, she's a water well." The investigation a total loss.

Through the gloom and shadows of oncoming night this crowd who went out so gaily return to the hotel with a feeling of sadness, disappointment, discouragement, each one of them swearing to himself that he would never drill another well on anything but a proven location. However, after a few days, a few weeks or a few months, that spirit which moved him in the first instance to speculate moves him again and he says, "I will take one more chance," and so it goes. With the regular old time oil man this is his life but if the Government is to fix the price of his commodity after he finds it the incentive to drill is removed.

Hazards of Drilling

In order that the reader may have a full appreciation of the hazard incident to drilling, even on the surest of locations, I will give you the following illustration of what happened over in what is called the Ingalls district in Oklahoma:

In 1921 the Magnolia Petroleum Co. brought in a well in the northeast corner of the northwest quarter of Section 34, Township 19, Range 4 East, Payne County, making about 800 bbls. a day at a depth of approximately 3,800 feet. Cosden & Co. owned a 40-acre lease immediately north of this and this well was a direct offset to this 40. A few months later another one of the companies drilled a well into the same sand, immediately offsetting the north line of this 40 acres, making 2,000 barrels per day, and at a subsequent date the same company drilled in a well immediately east of this well one-fourth mile and offsetting the northwest corner of the Cosden 40 acres, making approximately 1,500 bbls. per day; thus, it can be seen that the southeast corner of the Cosden 40 and the northeast corner and the northwest corner of this 40 acres had tremendously large wells offsetting it and offsetting the southwest corner a well was subsequently brought in making about 150 barrels a day. This 40 acres was literally surrounded by wells.

Cosden & Co. immediately started four wells, one in each corner of the 40 acres. These wells at that depth cost them approximately $80,000 each. One of them came in for 20 barrels a day; one of them made nothing and two of them had an initial of about 75 barrels each, and wells of this small caliber at such a great depth amount to what might be termed a total loss, and in addition to this, so sure were they of large production upon this property, that they laid a long pipe line to this lease to take care of the oil, which was also a loss. If this property had been in the hands of a small operator it would have undoubtedly bankrupted him, and yet it looked as though it was certain to produce large wells, but it only goes to illustrate and to show that there are no more sure shots in the game of producing oil.

Effect on Small Producer

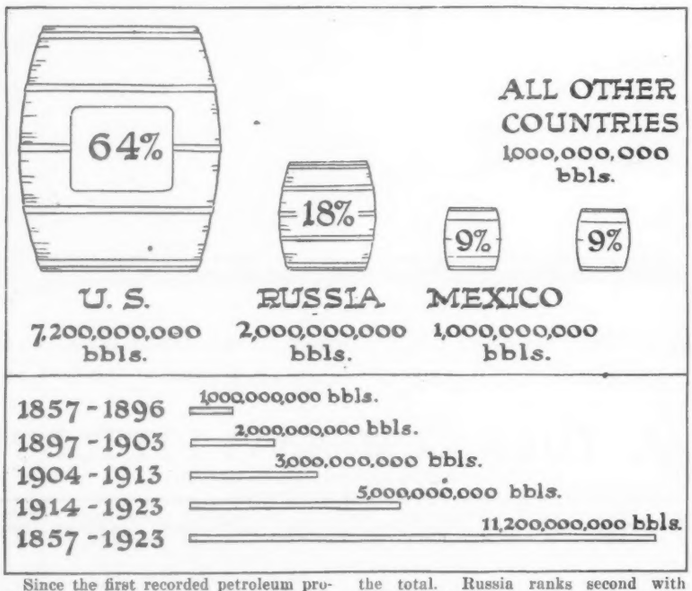
As to the effect upon the small producer who has production, it is my firm and fixed judgment that if the Government should undertake to regulate the prices that he should receive he will most certainly sell his properties to the larger companies which would put all the refiners without production out of business. There is just one reason why small producers do not sell their properties and that is the speculative feature of the price of crude oil. It has been the history of the industry that on definite and positive rises in the price of crude, that is to say when the price definitely swung upward it has usually gone higher each time, and most oil producers constantly live in the expectation that one day they will get $4 or $5 a barrel for their oil. They may never realize it but there is the hope and the chance and they play for it. If the Government is going to regulate the price these producers would dispose of their holdings and enter some other line of endeavor.

Against Price Control

I am opposed to the Federal Government undertaking any measure of price control. If it has any power at all it is a power of conservation and not one of price fixing. I believe that 99 per cent of the producers throughout the country enjoy the same view which I do. For the Government to undertake any measure of price regulation of crude oil and its products would ultimately lead it very far afield, as, for instance, the oil producer would be subjected to prices made by the Government for his product but at the same time he would be compelled to buy his supplies from industries which had no Government restriction on their prices, as, for instance, the Government would not undertake to fix the price of wages which the producer had to pay, nor the price of lumber, or the price of steel. Lumber, steel and labor form 90 per cent of his purchases.

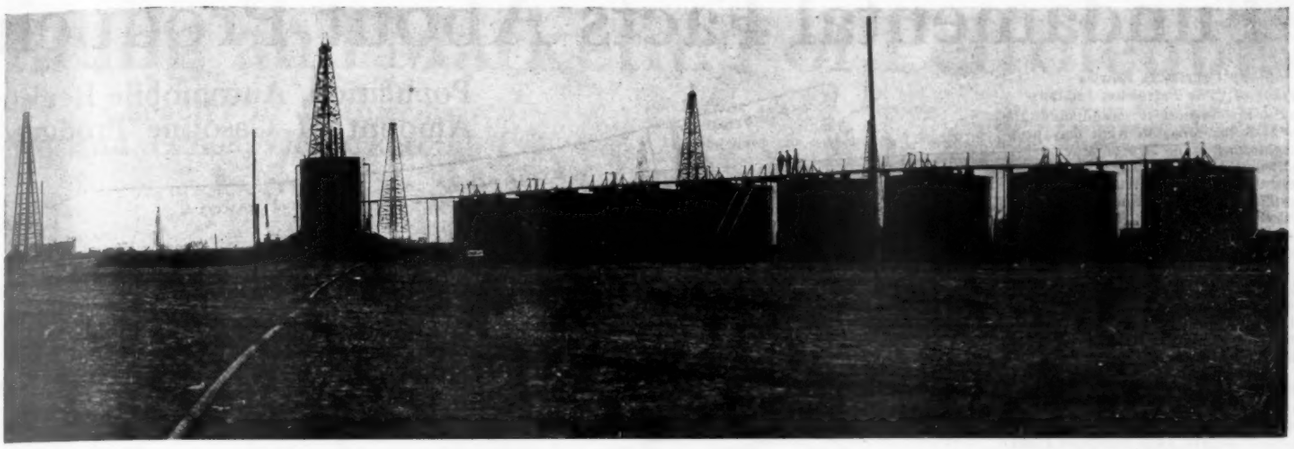
The consuming public is now facing a very serious divergence between production and consumption. The production curve is declining and the consumption curve is increasing and, without doubt, by September 1, they will be separated by at least 500,000 barrels per day. Therefore, for the Government to launch into a program of regulation of prices means a continuous stagnation in development work and the ultimate embarrassment of the industry to a point where it cannot serve the public as efficiently as it has in the past. The law of supply and demand in the great oil industry cannot be controlled by Governmental regulation and if it is attempted the people will find out all too late that the world is full of consumers of oil but there are very few producers, and without the producer the supply of crude oil in this country will constantly dwindle until a famine, the like of which has never yet been seen, will occur, and then after every industry in the country has been shaken to its foundation, they will have to fall back on the old time honored law of supply and demand and raise the prices to unheard of levels.

UNITED STATES HAS PRODUCED 64% OF TOTAL WORLD PETROLEUM OUTPUT



Since the first recorded petroleum production, over 11,000,000,000 barrels of petroleum have been taken from the earth.

The United States has produced by far the greatest quantity, a total of over 7,000,000,000 barrels, or 64 per cent of the total. Russia ranks second with 2,000,000,000 barrels, or 18 per cent and Mexico third with 1,000,000,000 barrels, or 9 per cent. The three countries combined account for 91 per cent of the entire world's production.



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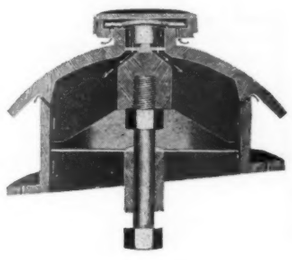

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2. PATENTED CONSTRUCTION. Our patented feature is illustrated at right. It consists of an offset at seams and joints which takes care of extra thicknesses of gasket and metal where sheets overlap and thus gives an exact fit of parts, an advantage possessed by no other tank. No costly and tedious calking is necessary, in erecting Maloney.

3. EASILY CLEANED OUT. A feature of Maloney Tanks appreciated universally is the cleaning-out plate. This plate is taken off and replaced from the outside, and when off the opening is flush with bottom of tank, there being no rim for scraper to catch on.

4. 8-INCH THIEF HATCH. Tanks are equipped with 8-inch thief hatches of our own design. Lids of hatches cannot be left open accidentally, it being impossible to raise them to perpendicular position.

5. VACUUM-PRESSURE VALVES. The decks of Maloney Tanks are of gas-tight construction and are equipped with vacuum-pressure valves. Flow tanks are equipped with heavier type self-seating Vacuum-pressure valves. If the buyer prefers, we can furnish with our tanks any standard make of mechanical or liquid seal valves he might specify.

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MALONEY TANK MFG. CO. TULSA, U. S. A.

MALONEY

Fundamental Facts About Producing

By Charles E. Bowles
Author of "The Petroleum Industry"

From an industrial standpoint the world is living today in what may properly be termed "The Era of Machinery."

And machinery's three great driving powers are steam, electricity and gasoline. The answer to steam is the engine, and the locomotive with its long train of cars—the answer to electricity is the motor with its long lines of machinery—the answer to gasoline is the internal combustion engine driving the automobile, the motor truck, the farm tractor and the airplane.

One quarter of a million miles of railroads, valued at more than $19,000,000,000, have been built around the locomotive. Our street railways, our interurbans and our factories with electrically driven machinery, valued at hundreds of millions of dollars, have been built around the electric motor. And our automobile truck, tractor and airplane industries, valued at several billions of dollars, are built around the internal combustion engine.

Immensity of Industry

The United States today, with its 110,000,000 population has over 15,000,000 automobiles and motor trucks—and is building new ones at the rate of 4,000,000 a year. It is producing over 700,000,000 barrels of crude oil a year, because the industries of the United States are operating today on a scale that requires that amount of crude oil. It has over 500 refineries with an aggregate value of over a billion dollars and a capacity for handling over 2,500,000 barrels of crude oil a day. In 1923 these refineries made over 7,500,000,000 gallons of gasoline, for which the public paid approximately $1,000,000,000. And finally, the assets of the petroleum industry are conservatively valued at well over $8,000,000,000.

The greater part of the railroad mileage of the United States was built in the 30 years following the Civil War. The great expansion of the street railway and the interurban came some years after the peak of railroad building had been passed. Then came the automobile—and the changes in the financial structure of and the weakened security of investments in railroads, street car and interurban lines are an amazing commentary on the far-reaching effect of the evolution of transportation wrought within the last 20 years by the automobile and the motor truck. There are in the United States today probably less actual miles of steam railroad than there were five years ago. And while a goodly percentage of the street railways and interurban lines are either in financial difficulties or in the hands of receivers, the number of automobiles and motor trucks has increased from 7,600,000 to 15,220,000 within the last five years and the production of crude oil has increased from 378,000,000 barrels in 1919 to 739,000,000 in 1923.

Sources of Information

The figures used in connection with this article have been assembled from the following sources: The population, from the census of 1920; the car and truck registration from statistics compiled by the trade publication "Automotive Industries;" the production of crude oil from statistics compiled by The Oil and Gas Journal; the number and capacity of refineries, from a list compiled January 1, 1922 by the United States Bureau of Mines and brought up to date from the records of dependable trade papers; the value of refineries, from an estimate as of January 1, 1923, by H. G. James, a recognized authority in the refining business, and brought up to date from trade paper reports; the gasoline produced, from reports of the United States Bureau of Mines. The indicated consumption for each of the four great areas (Eastern, Mississippi Valley, Rocky Mountain and Pacific Coast) was obtained by dividing the number of automobiles (15,222,658) into the total domestic consumption of gasoline (6,685,035,280) gallons which gave a quotient of 439. Multiplying 439 gallons by the number of cars and trucks in each area gave the figure which will be referred to as the approximate consumption of gasoline for each area.

The use of the figure 439 is not intended to convey the idea that it exactly represents the average consumption of gasoline per car and truck in 1923, but as 6,685,035,280 gallons of gasoline were consumed in the United States in 1923 the regional allocation of consumption on the basis of car and truck registration serves the purpose and as automobiles and trucks consume about 90 per cent of the gasoline the final figures for each area are undoubtedly very close to the actual consumption.

Four Natural Divisions

On the basis of crude oil production and refining the United States has been divided into four areas: All of the area east of the Mississippi River is herein referred to as the "Eastern" area; from the Mississippi River to the Rock Mountains is referred to as the "Mississippi Valley" area; the six States through which the Rocky Mountains pass as the "Rocky Mountain" area; and the remaining western States as the "Pacific Coast" area. On the map these areas are marked by heavy boundary lines.

Allocating the population to these four areas we find that 70 per cent of the people of the United States live east of the Mississippi; 21 per cent live between the Mississippi River and the Rocky Mountains; 3 per cent live in the Rocky Mountain area; and 6 per cent in the Pacific Coast area.

We find 63 per cent of the cars and trucks east of the Mississippi River; 24 per cent in the Mississippi Valley area; 3 per cent in the Rocky Mountain area and 10 per cent in the Pacific Coast area. In checking the percentage of cars and trucks against the percentage of population in these four great areas, we find that the Pacific Coast area contains 6 per cent of the population and 10 per cent of the cars. The Rocky Mountain area contains 3 per cent of the population and 3 per cent of the cars. The Mississippi Valley area contains 21

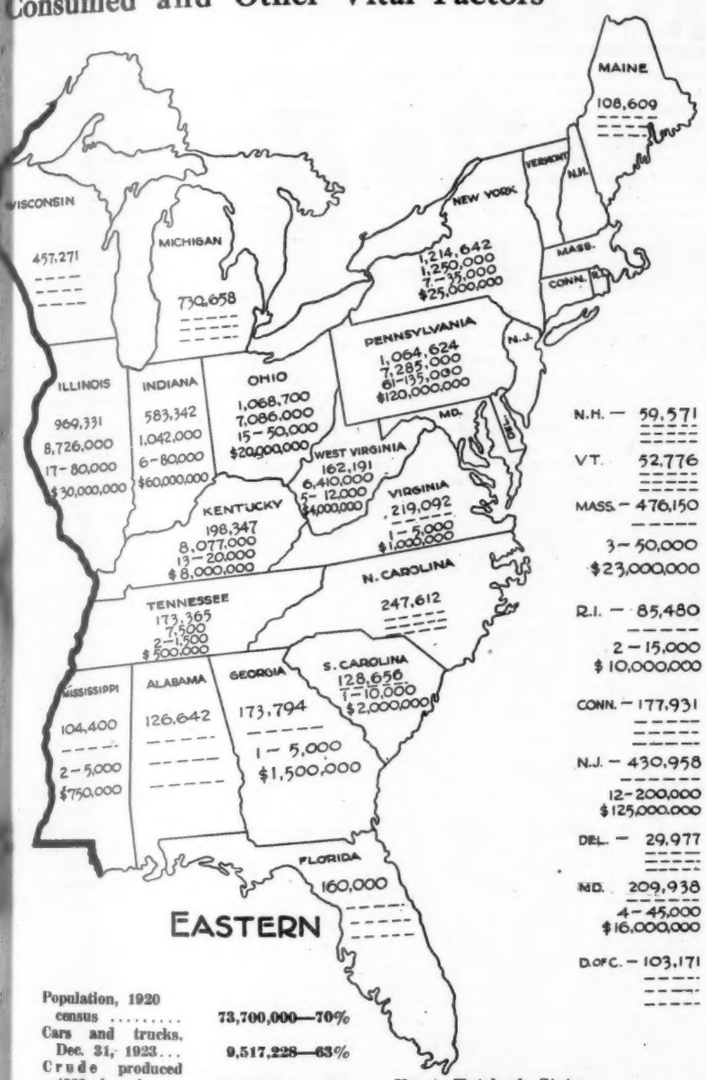
PACIFIC COAST	
Population, 1920 census	6,000,000— 6%
Cars and trucks, Dec. 31, 1923	1,592,360—10%
Crude produced in 1923, barrels	263,728,895—36%
Daily average 1923, barrels	723,000
Refineries—Number and approximate rated daily capacity—75	525,600—22%
Value of refineries $	225,150,000—21%
Gasoline produced 1923, gallons	1,283,200,165—17%
Indicated consumption, gallons	700,000,000—10%
Indicated SURPLUS, gallons	600,000,000

ROCKY MOUNTAIN	
Population, 1920 census	3,000,000— 3%
Cars and trucks, Dec. 31, 1923	463,156—3%
Crude produced 1923, barrels	45,127,580— 6%
Daily average 1923, barrels	124,000
Refineries—Number and approximate rated daily capacity—36	138,200— 5%
Value of refineries $	75,525,000— 7%
Gasoline produced 1923, gallons	632,210,387— 8%
Indicated consumption, gallons	203,000,000— 3%
Indicated SURPLUS, gallons	400,000,000

MISSISSIPPI VALLEY	
Population, 1920 census	22,800,000—21%
Cars and trucks, Dec. 31, 1923	3,649,914—24%
Crude produced 1923, barrels	390,514,662—53%
Daily average 1923, barrels	1,070,000
Refineries—Number and approximate rated daily capacity—339	1,283,500—46%
Values of refineries $	337,420,000—61%
Gasoline produced 1923, gallons	2,910,208,135—39%
Indicated consumption, gallons	1,600,000,000—24%
Indicated SURPLUS, gallons	1,300,000,000

Refining and Marketing of Petroleum

Number and Capacity of Refineries, Consumed and Other Vital Factors



Population, 1920 census	73,700,000—70%
Cars and trucks, Dec. 31, 1923	9,517,228—63%
Crude produced 1923, barrels	39,883,500— 5%
Daily average 1923, barrels	109,000
Refineries—Number and approximate rated daily capacity—152	748,500—27%
Value of refineries $	436,750,000—41%
Gasoline produced 1923, gallons	2,730,326,456—36%
Indicated consumption, gallons	4,178,000,000—63%
Indicated SHORTAGE, gallons	1,400,000,000

Key to Entries in States:

1st Line—Number of cars and trucks December 31, 1923. Total for United States, 15,222,658.

2nd. Line—Production of crude oil for year 1923. Total for United States, 739,254,637.

3rd. Line—Number of refineries with rated capacity, December 31, 1923. Total for United States, 603—2,695,800.

4th. Line—Value of refineries, December 31, 1923. Total for United States, $1,074,845,000.

per cent of the population and 24 per cent of the cars. The Eastern area contains 70 per cent of the population and 63 per cent of the cars. This close similarity of percentages of population and cars is more striking in view of the fact that there are wide variations in the wealth and purchasing power of the people in these four great areas.

Crude Output Varied

While population and car distribution compare closely, they have no relation whatever to crude oil production, as the Pacific Coast area produced 36 per cent of our crude oil in 1923, the Rocky Mountain area 6 per cent; Mississippi Valley area 53 per cent, and the Eastern area 5 per cent. Expressed in barrels of oil the Pacific Coast produced an average of 625,600 barrels a day during 1923; the Rocky Mountain area produced 138,200 barrels a day; the Mississippi Valley area produced 1,070,000 barrels a day; and the Eastern area about 109,000 barrels a day.

The refineries of the United States represent an investment of approximately $1,000,000,000, of which about 41 per cent, or $436,000,000 is east of the Mississippi River. The area between the Mississippi River and the Rocky Mountains contains about 31 per cent, or $337,000,000; the Rocky Mountain area about 7 per cent or $75,000,000 and the Pacific Coast area about 21 per cent, or $225,000,000.

In comparing the average daily crude oil production of each of these areas for 1923 with the approximate rated daily capacity of the refineries we find California's refining capacity to be about 100,000 barrels a day less than the production; the Rocky Mountain refining capacity about equal to the production; the Mississippi Valley refining capacity slightly greater than the production, while the refining capacity of the East is about seven times as great as the production of crude oil.

Grew, Hand-in-Hand

On the Pacific Coast the refining capacity and the production of crude oil have for years grown hand-in-hand with the result that until the "flood" of overproduction in 1923, they were nicely adjusted to each other as well as to the market which included the Pacific Coastal areas of North and South America and a rapidly expanding trade in the Orient. When the flood of 1923 came, the tank steamer solved the problem by getting a worldwide distribution for the surplus much of which passed through the Panama Canal to Gulf, and Atlantic Coast ports as well as to Europe.

California's crude oil production and refining capacity were increased enormously in 1923, the crude oil production amounting to 263,000,000 barrels (as compared with 139,000,000 in 1922) while the gasoline production amounted to over 1,280,000,000 gallons. With almost 1,600,000 cars and trucks in the Pacific Coast area it had an indicated consumption of about 700,000,000 gallons of gasoline in 1923, with an indicated surplus of some 600,000,000 gallons for the year.

An entirely different situation has prevailed, however, in the Rocky Mountain area. Deprived of a great pipe line system, this area has had to "hold down" its crude oil production to a reasonable ratio with its refining capacity, sending its surplus gasoline by tank car train to the Gulf Coast and the East. The completion this year of the Sinclair pipe line from the Salt Creek Field to Freeman, Mo., where it unites with the main trunk pipe line from the Mid-Continent, will give Wyoming oil fields their long-needed pipe line outlet to the Eastern refineries. With over 460,000 cars and an indicated consumption of about 200,000,000 gallons of gasoline in 1923 the Rocky Mountain area had a surplus of something like 400,000,000 gallons for the year.

In Different Areas

In the Mississippi Valley area with its 3,600,000 cars and trucks and an indicated consumption of about 1,600,000,000 gallons, we find a gasoline production of over 2,900,000,000 gallons. This indicates a surplus of approximately 1,300,000,000 gallons for 1923.

The area east of the Mississippi River had over 9,500,000 cars and trucks with an indicated consumption of about 4,178,000,000 gallons of gasoline. As the refineries produced a little more than 2,700,000,000 gallons in 1923 there was an indicated shortage of about 1,400,000,000 gallons.

As a great producing, refining and consuming region, the Mississippi Valley area is "out of balance" with the Eastern area in the sense that the Mississippi Valley area has a surplus of crude oil and a surplus of gasoline, while the Eastern area always has a shortage of crude and a shortage of gasoline. In other words, the Mississippi Valley area is a "seller," while the East is always a "buyer," with the buyers' strategic position as a price-maker.

The net result of the constant struggle for an economic adjustment of this "producing,-refining,-marketing" situation has been that a large part of the refining capacity in the Mid-Continent and Rocky Mountain areas has been shut down for about two years, and at the same time, in 1923, about 1,300,000,000 gallons more gasoline were produced in the Mid-Continent and about 400,000,000 gallons in the Rocky Mountain area than there were regional markets for. On the other hand large quantities of Mid-Continent crude oil and gasoline together with the greater part of the surplus of Rocky Mountain gasoline found their way to the Eastern refineries and markets which in 1923 produced 2,700,000,000 gallons of gasoline against an indicated market for 4,178,000,000 gallons. At the same time the bulk of Mexico's crude oil was finding its way to the Gulf Coast and Atlantic Seaboard refineries which converted most of it into lubricating and fuel oil, as the greater part of Mexican crude has a low gasoline content.

Location of Refineries

The location of the refinery is a purely economic problem, but with the unfortunate corollary that with the slowly changing cycles of industrial development that program which, in any given territory, is most profitable at given time, may become decidedly unprofitable a few years later. It would appear both logical and economic to build a refinery in the heart of its market—and the pipe line and tank steamer have made it possible to do so.

Not all refineries, however, have been stragetically located—and the resulting economic waste has been especially large in the Mid-Continent, where the refinery situation has been grossly overbuilt, largely due to the misguided efforts of novices and promoters who have lost millions of dollars of their stockholders' money. This is indisputably proven by the fact that while about half of the refining capacity has been shut down, the other half has produced almost twice as much gasoline as there is a local market for, at the same time that large amounts of crude are either pipe lined or tanked out of the area.

To illustrate another angle of the refining situation: Suppose that every barrel of crude oil produced in the Mississippi Valley area were refined within the same area and that an average of 30 per cent gasoline were obtained. This would give a daily production of about 12,000,000 gallons or about 4,000,000,000 gallons a year. As the Mississippi Valley area's gasoline market is about 1,600,000,000 gallons a year there would be a surplus of about 2,400,000,000 gallons available for the Eastern market. On the other hand, if every barrel of oil produced east of the Mississippi River were refined in the same area, it would yield about 1,250,000 gallons a day, or about 400,000,000 gallons a year. As the Eastern gasoline market was about 4,178,000,000 gallons in 1923, there would be a shortage of about 3,800,000,000 gallons. And if the Mississippi Valley surplus of 2,400,000,000 were shipped to Eastern markets, there would still be an apparent shortage of 1,400,000,000 gallons.

Gasoline for 1923, in Gallons

Stocks, January 1, 1923	883,792,861
Produced in United States	7,555,945,143
Imports	191,313,540
Total	8,631,051,544
Consumed in United States	6,685,035,280
Exports	871,116,614
Stocks, December 31, 1923	1,074,899,650
Total	8,631,051,544

What Happened in 1923

Instead, however, of working out that way, great quantities of both crude oil and gasoline were shipped during 1923 into the Eastern area from the Mississippi Valley, the Rocky Mountain and the Pacific Coast areas, together with large quantities from Mexico, which made it possible for the United States to produce over 7,500,000,000 gallons of gasoline, to consume over 6,600,000,000 gallons here at home, to export over 870,000,000 gallons to foreign countries and to increase our stock of gasoline on hand, December 31, 1923, (slightly over 1,000,000,000

(Continued on Page 78)

Dry Holes Cost Oil Men Millions Yearly

Public Benefits When Oil Fields Are Found But Does Not Share in Vast Losses Sustained When Efforts Are Futile

By Andrew M. Rowley

At least $91,410,000 was spent last year by oil men in the United States in drilling dry holes. During the previous year more than $82,000,000 was spent in similar futile efforts to procure oil. About 24 per cent of all the wells completed in the United States are dry and the money expended for the acreage on which they are located and for drilling these wells is lost.

The $91,000,000 lost last year does not include the money paid for leases on land or other expenses other than the actual drilling of the wells. It is a conservative estimate based on a figure of $15,000 for each of the 6,094 dry wells which were completed. In many cases, the cost of a dry well would range as high as $100,000 or more. One well drilled in California, from which no production was procured is estimated to have cost $300,000 before being abandoned, it being a deep well and having had trouble with fishing jobs, etc. The 211 dry holes drilled in California last year are conservatively estimated to have cost an average of $40,000 each. Five wells drilled last year in one section of California, by the Standard Oil Co. of California, cost $1,000,000 before being abandoned, and not a drop of oil was found in any of them.

Much Lost in Storage

In addition to this vast sum expended in drilling dry holes last year, many more millions of dollars was invested in building storage from which probably little or no return will ever be received by the owners. In California alone it is estimated that at this time there is 28,000,000 barrels of empty storage which represents an investment of approximately $17,000.000 which must be written off from the 1923 operating expenses because production of crude oil in California is declining steadily and rapidly and this storage, doubtless, will never be used or needed. In other flush fields of the United States, or fields which experienced a boom because of the development of wells of the gusher type which flooded the field with oil for the time being, immense quantities of storage in the form of steel tanks, concrete reservoirs and other forms were erected and with the decline in the production of these fields that storage is useless and, for the most part, a loss.

These losses in drilling dry holes and building storage which has become useless are borne by individuals, small firms and the little operating companies as well as the big concerns in the oil business. Much of it represents investments made by persons not connected in any way with the oil business, but who have grouped together and put up enough money to drill a well which turned out to be dry. John Smith is told by a friend that Sam Jones has a lease on which it is almost certain oil will be found. The lure of possible sudden wealth and the spirit of chance and investment causes Smith to place some of his money in the proposition. Many others do the same and Jones procures enough to drill the well. It is completed a dry hole. The money put into it is lost. It costs considerably more to drill the well than the average of $15,000 given above, but some of the material used can be salvaged and the estimate given in this article is the actual amount lost.

Does Not Include Promotion Schemes

Understand, however, the sums mentioned and instances cited do not include the millions of dollars invested annually by persons throughout the United States in stock promotion schemes. This article pertains exclusively to the legitimate operations where actual drilling is done and wells completed. It does not include any money raised by the sale of stock or in promotion work of any kind. It pertains only to the actual money expended in the drilling and completing of a well.

In addition to the amount mentioned as having been lost in the drilling of dry holes, many more millions of dollars were lost in the drilling of wells where oil was procured and which would be rated as oil wells but which did not have enough production to pay the expenses of the drilling. In other words, many oil men drilled deep wells in the hope of finding large production and were rewarded with wells making possibly 50 barrels a day at the start and which declined rapidly. That output would not pay expenses because the drilling of deep wells costs from $40,000 to $125,000 each.

Loss Totals $4,500,000,000

Since the beginning of the oil industry, approximately $12.000.000.000 has been placed in the legitimate channels of oil field development and operation in the United States. Only $7,500,000,000 has been returned from the sale of crude oil produced. Thus there remains a deficiency of $4,500.000.000, which takes into consideration only the proper, legitimate costs of searching for and producing crude.

There is no business in the world more uncertain than that of drilling for oil. It is entirely different from any other kind of mining, for oil well drilling is classed as mining. In coal mining, the vein of coal can be located and it can be determined fairly accurately just how much coal is obtainable. It can be determined just where the coal is, how thick the vein is, how much territory it covers and the amount of the coal it contains. It is then a question only of bringing that coal to the surface. The same is true in mining for iron ore. With oil it is entirely different.

Two examples come to mind which illustrate this point, I think. Both are of comparatively recent origin. There are thousands of similar cases on record. A little more than a year ago, the Roland Oil Co. drilled a well in the Bristow section of Oklahoma and, when completed. the well came in making something like 20,000 barrels of oil a day. It was regarded at that time as the biggest well ever completed in Oklahoma and it probably ranks second in Oklahoma now in initial production. The Carter Oil Co. had a lease next to the big gusher and this company drilled a well just 160 feet from the Roland well. This well was drilled to the same sand from which the Roland well procured its production, but the Carter well was a dry hole. It did not produce any oil. Yet it was just 160 feet away from a gusher which made 20,000 barrels of oil a day.

Oil All Around but Dry

In 1921, the Magnolia Petroleum Co. drilled a well in the northeast corner of the northwest quarter of Section 34, Township 19, Range 4 east, in Payne County, Oklahoma. That well made about 800 barrels a day at a depth of approximately 3,800 feet. Cosden & Co. owned a 40-acre lease next to this well, the 800-barrel well being a direct south offset to the Cosden acreage. A few months later another oil company drilled a well to the same sand as was producing the 800 barrels of oil in the first well, this second well being right next to the Cosden property and on the north line of that property. This well made 2,000 barrels a day. The same company drilled another well east of this 2,000-barrel producer and directly offsetting the northwest corner of the Cosden 40 acres. This third well made 1,500 barrels daily. Subsequently a well was drilled offsetting the southwest corner of the 40 acres and a 150-barrel producer was procured. Thus it will be seen that producing wells were located on every side of the 40 acres owned by Cosden & Co., one making 2 000 barrels, another 800, a third, 1,500 and the fourth 150 barrels.

Any person in the world would have bet his last cent the Cosden 40 acres overlay a big oil pool and that big wells would be struck on that property. Cosden & Co. immediately started four wells on the 40 acres, one in each corner. Wells at that depth cost approximately $80,000 each. One of these wells came in making 20 barrels a day; one of them was absolutely dry and two of them had an initial production of 75 barrels a day. Wells of this small caliber at such a great depth, with the cost of drilling them so high are what might be termed a loss. In addition, Cosden & Co. was so sure of production on the property it laid a long pipe line to the lease to take care of the oil. The expense of this line also was a loss.

"Promising Gushers" a Joke

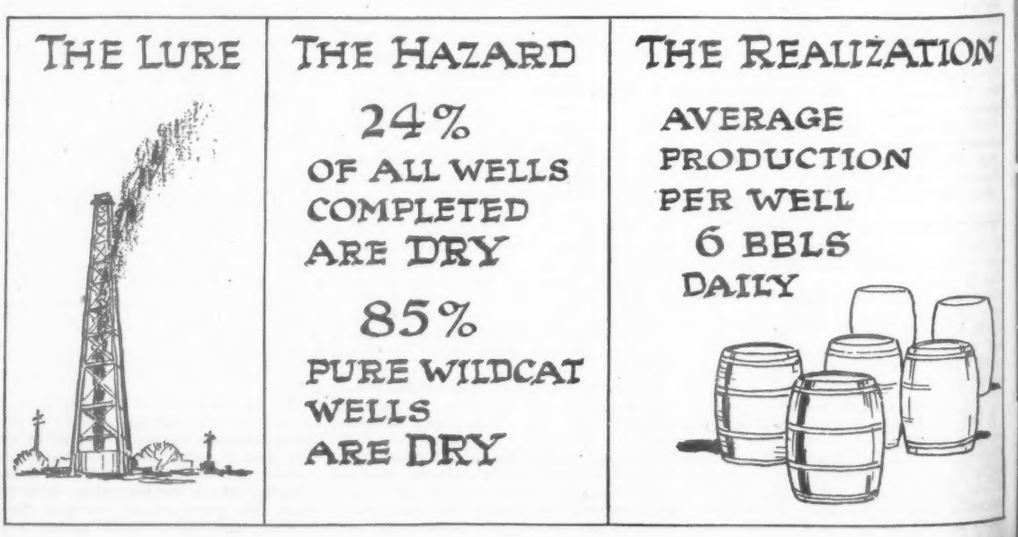
The history of the oil business is filled with instances of this kind. They are so common as to be almost an everyday occurrence and all oil men at some time or other have had experiences of this kind. There is nothing certain in the business of producing oil. It is the most hazardous undertaking from a financial standpoint probably in business life. It is one of the reasons real oil men have to smile when they read some of the literature of stock promoters who "promise gushers" or who have "acreage close in to production." There is only one way to tell whether there is oil in a certain place and that is to drill a well.

Even geology goes wrong many times. Take for instance the Sweetgrass Arch in Montana. It is said to be the largest structure ever discovered. The structure "sticks out plainly everywhere." As one oil man remarked: "It has the prettiest geology I ever saw." It was expected that section would develop into one of the world's greatest oil fields.

Oil men and oil companies flocked to Montana and a vast sum was expended for leases and drilling wells alone. Immense amounts of money, in addition, were spent for pipe lines, camps for workmen, refineries and other necessities of an oil field. Out of all the money expended, one small producing area was developed which has a production of about 1,000 bbls. daily under good conditions. One good well in a flush field would produce far more than that amount. A sum of $18,000,000 was spent in Montana during a period of years in development work, etc., in connection with the endeavor to find commercial production. For this amount of money, but two small oil fields have been found and their total production last year was about 2,500,000 bbls.

Why Do Men Drill for Oil?

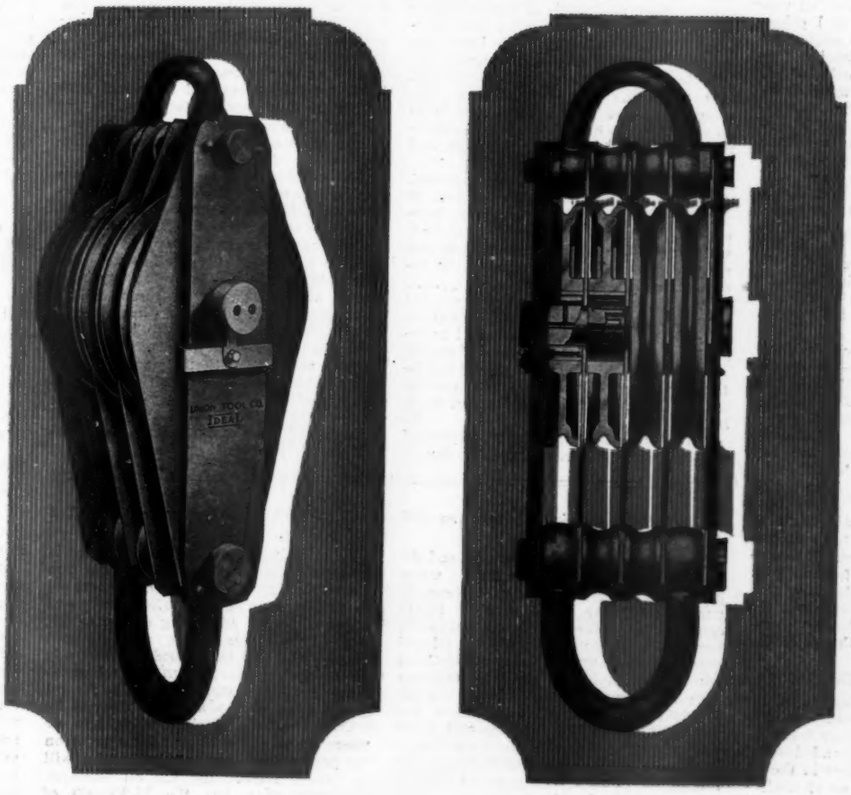
With 24 per cent of all wells drilled coming in dry and 85 per cent of all wells drilled in wildcat territory, that is areas which have not previously produced oil or where there is not any producing wells at the time, and with the experience of the losses of millions of dollars yearly in futile drilling operations staring them in



IDEAL

Roller Bearing Traveling Block

[OVERBALANCED]



Traveling block failures occasion costly shutdowns.

Note large area of roller bearing and perfect lubricating arrangement which assures continuous service.

NSCO THE NATIONAL SUPPLY COMPANIES NSCO

the face, the question may well be asked why oil men drill for oil and take this great chance of losing all they possess. The answer is simple. "Hope springs eternal in the human breast" and the lure of the gusher which they may get spurs these men on to risk their money in drilling for oil. It is the eternal hope of getting a good producer and making a fortune from the oil.

Take away this incentive for drilling, this hope of a big reward for the vast risk undertaken, or regulate the price which a man will get for his oil, and there will be no drilling. When a man risks everything he owns in an effort to procure oil, he certainly is entitled to a good return for that effort if he finds oil. If he does not find it, he loses everything. Unless he gets a good return, why take the risk? Any effort to regulate prices in the oil industry would result in only one way—there would be little or no oil in a very short time, because a man would be foolish to hazard his money in a proposition where someone else would tell him what he could procure for the product of his own risk and venture.

What Regulation Accomplishes

What happened when the Government inaugurated certain regulations during the war is a good example. Drilling regulations were made effective and prices were more or less under the control of Government boards. Production failed to come up to consumption, stocks of oil were depleted and a most alarming situation developed. There was only one result which could come from such a condition. It is bound to come any time the Government or any agency seeks to regulate prices or drilling in connection with the oil business. With production far below requirements and stocks of crude depleted, prices of oil advanced in 1920 to the highest ever recorded in the history of the industry since the early days of the business. Mid-Continent crude was priced at $3.50 a barrel and Pennsylvania grade oil sold for $6.10 a barrel.

Another feature of the oil business which generally is not realized or considered is the fact that the millions lost in drilling dry holes is not added to the cost of oil. The oil men themselves suffer this loss and the consumers of gasoline and other petroleum products are not forced to share any of this loss through higher prices. The fact that John Smith and Sam Jones lost all the money they possessed in drilling in a vain effort to obtain oil has no effect whatever on the price of crude oil or gasoline. It is the gushers brought in by the fortunate oil men which affect the price because it is the supply of crude oil available and the consumption of gasoline and other petroleum products which sets the price for crude oil and gasoline.

Old Man "Supply and Demand"

When there is a big production of oil, prices fall and when the production fails to equal the consumption prices increase. It is the old law of supply and demand again, but it certainly operates in the oil business. Changing conditions of production last year resulted in the price of crude petroleum being changed on 105 days out of the 365 of the year.

Nothing but the law of supply and demand could be responsible for so many price changes. As production in the early part of the year failed to come up to consumption, prices rose. As California began to flood the market with its oil and send this oil around to the Atlantic Coast and keep out oil from the Mid-Continent area and Pennsylvania and the Central West, prices began to fall. Then the Powell Field in Texas blossomed forth with a production that rose in a couple of months to more than 8,000,000 barrels a month from nearly nothing and the last straw was added which broke the camel's back. Prices started to fall and fell often and rapidly.

So it is in the oil business. There is absolutely no certainty in it. No one knows what may happen tomorrow. Everything may be going along finely and prices will start advancing and some fellow will discover a big oil pool and cause the market to be flooded with crude oil and prices start down the toboggan. Hence it is the man who drills for oil should get a good reward for the risk he takes. Start to regulate when, how or where he should drill and set a price on the product he hopes to obtain and it will be "Good Night" for the oil business. Not only that, but the 15,000,000 of owners of automobiles will be real underers. They are the ones who depend on the intrepid men in the oil business to procure the oil from which gasoline is made. Limit the supply of crude oil and gasoline prices are bound to soar to such heights as to make operating an automobile a luxury for a rich man and not a necessity for almost everyone as is the case now.

NO DISCRIMINATION IN GASOLINE PRICES SAYS PITTSBURGH CHAMBER

The Power and Fuel Committee of the Pittsburgh Chamber of Commerce, which has a membership of more than 6,000 citizens, has recently issued a report of its investigation into charges that Pittsburgh was being discriminated against in the matter of gasoline prices. That report, which is of timely interest just now, says:

"There is probably no subject upon which there has been such a mass of information and perhaps misinformation, presented as in regard to the crude oil industry and its allied products. There is no activity that seems to have the glamor of romance attached to it quite so strongly as does that which accompanies the boom condition of a new oil district; and Pittsburgh and this part of the country has known something about it in days gone by. The idea of fabulous wealth, suddenly realized as a result of sporadic drilling, has always been a tempting bait to the uninitiated. And it is no wonder, with this misconception,—with the price of gasoline varying from time to time,—with the remarkable stories about new fields of production,—and with the old-time feeling (but-now-erroneous-idea) of Pittsburgh being the center of the oil industry, that our people have been sensitive and easily persuaded that something has been wrong. The committee hopes that it may be able to do something to quiet some of this agitation—and this by the use of facts and reason in the place of imagination.

"Because the subject is so complicated, so much involved with consideration of processes of distillation, cracking, compressing, etc., and with matters of rail, water and pipe line transportation and relative values of other products to be obtained from a barrel of crude oil, ... it is not surprising that people are led astray by the demagogue and fail to grasp the true meaning of the statistical information and the fact that the law of supply and demand still holds and should not be tampered with unreasonably by governmental interference in the form of regulation.

"We are not particularly impressed with the suggested remedy of the Senate Committee that because the business is clothed with great public interest it per se shall be regulated and controlled as a public utility. Necessity alone does not determine, in peace-times, the requirement of governmental or police regulation and where there is no public obligation because of being a quasi public utility and having public rights of condemnation there will be doubtful gain to the public interest to have the industry hampered and controlled by Government agents. We have seen too much of this practice in the recent past to have a belief that the public will be any great gainer thereby. The wartime abuse and evils of railroad regulation ought to be sufficient warning, so that the people in the United States would not try new experiments in this line.

"The Power and Fuel Committee has been studying the subject of price regulation of gasoline and related subjects, particularly in the Pittsburgh district, for some months, and now submits its report.

"The oil and gasoline business is too complicated a subject, with too many variables and without the usual requirements, to be classed as a public utility demanding governmental interference or control or regulation.

"The retail prices and the usual curb and filling and service station prices are too variable and dependent upon too many factors to be of any value in reaching conclusions.

"No reasonable or accurate conclusions can be drawn from any other list of prices than the wholesale figures or tank wagon prices, as these are free from minor local variations and State tax.

"The Pittsburgh district has not been discriminated against as to gasoline prices, although during the recent sudden depression in the oil industry tank wagon prices temporarily appear to be slightly lower in nearby communities.

"The members of the Pittsburgh Chamber of Commerce and all citizens should avail themselves of every opportunity to refute the popular, but misconceived opinion of discrimination against the Pittsburgh district."

FUNDAMENTAL FACTS OF THE OIL INDUSTRY

(Continued from Page 75)

gallons) by an amount almost equal to the amount of gasoline imported (over 191,000,000 gallons). In other words during 1923 our domestic and foreign markets consumed all of the gasoline we produced—and the increase in gasoline stocks between January 1 and December 31 was offset almost exactly by our imports of gasoline.

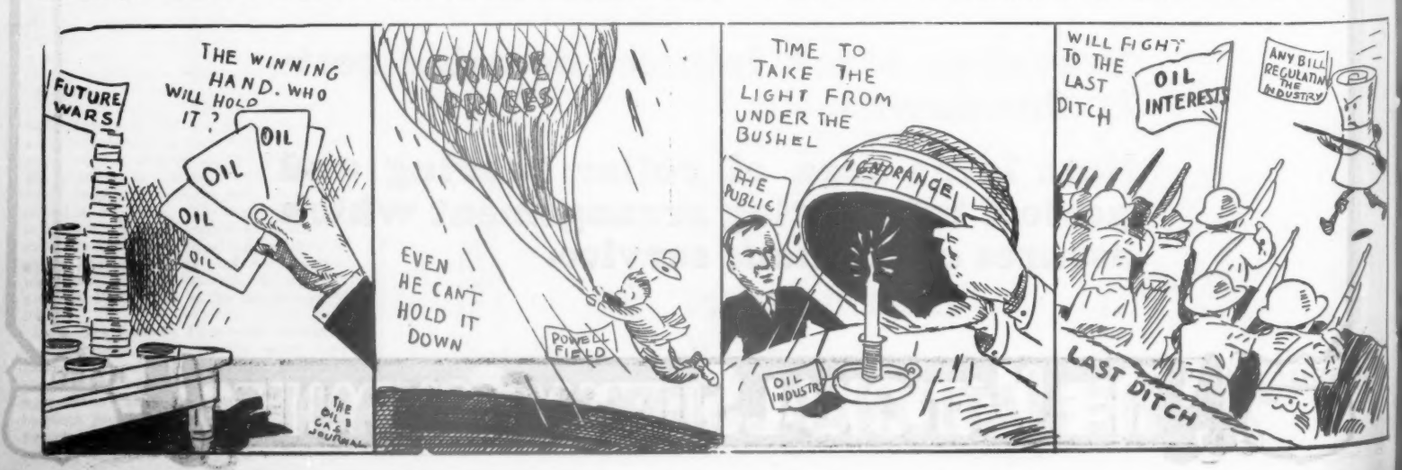
In reviewing the great crude oil producing area of the United States, whose 300,000 wells are today producing at the rate of 1,000,000 000 barrels in 18 months, the tens of thousands of miles of pipe lines, the 130,000 tank cars, the several hundred tank steamers, the thousands of acres covered with tank farms, the hundreds of refineries, the thousand gasoline plants and the tens of thousands of filling stations one can hardly realize that six-sevenths of all this development has come since the year 1900.

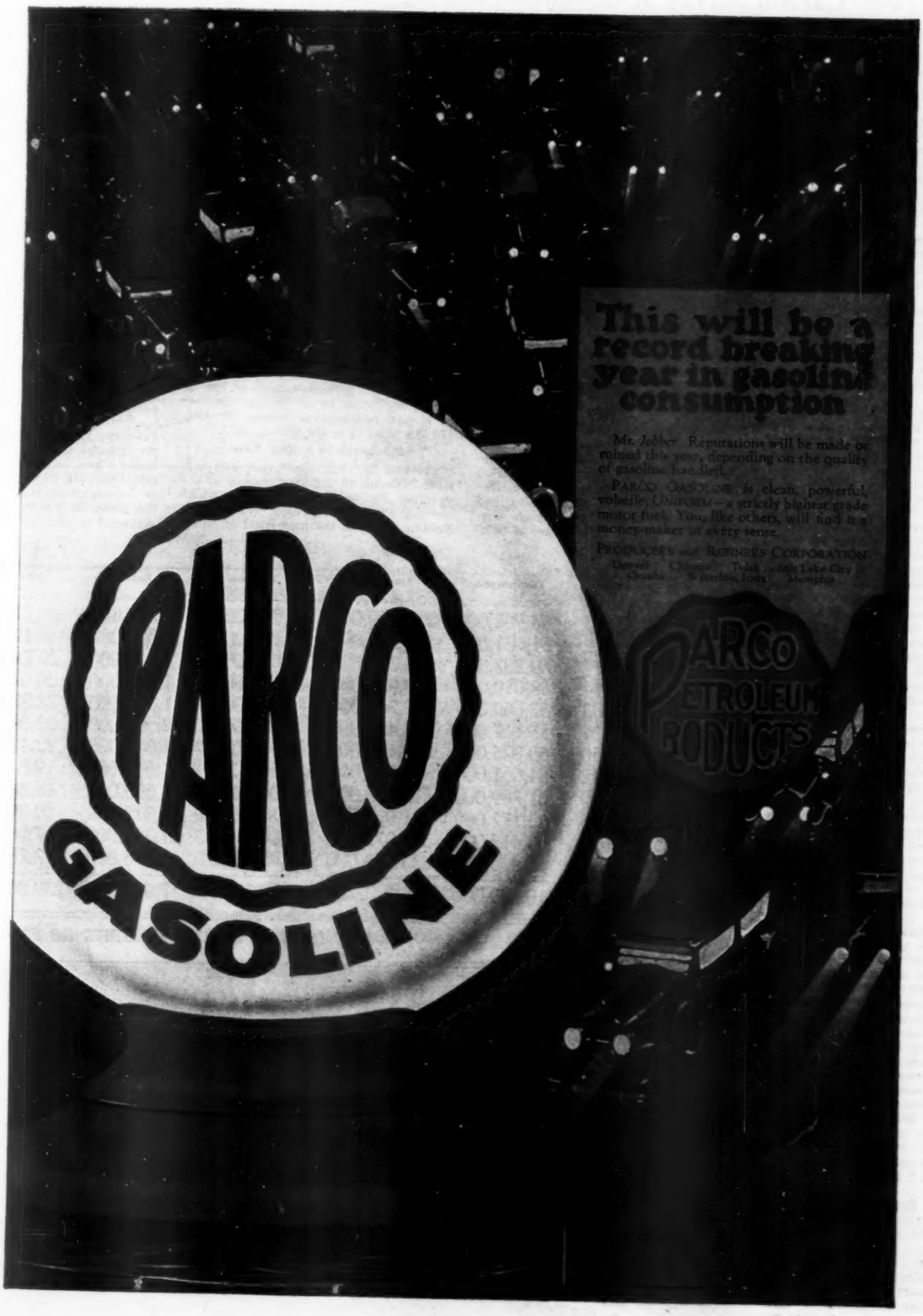
In comparing the marvelous growth of the petroleum and automobile industries during the last five years with the lack of expansion and the financial troubles of our steam railroads, our street cars and our interurban roads, one is amazed at the far-reaching effects of the petroleum and automobile industries on our other American industries and our American life.

There is but one standard by which to measure the life of an individual, a corporation or an industry—and that standard is service. And regardless of the mistakes of some individuals and some corporations if the real petroleum industry, (not its counterfeit, "the oil game") is fairly measured in terms of the service that it is rendering, it amply justifies the continued financial support of those whom it serves.

HOW LONG CAN WE KEEP PACE?

Where will the oil to satisfy requirements come from year after year, and how long can we keep up the pace? These are plain common-sense business questions, predicted on our present oil requirements as an established fact and on the suggested possibility that our prodigal opening of our petroleum heritage may cause its too rapid depletion if not its early exhaustion in the midst of our spendthrift career, and at some untoward moment send us as beggars to foreign countries for the precious fluid necessary not only to satisfy our extravagant habits, but even to sustain our industrial prosperity, our standards of living, and our civilization. — David White, chief geologist, U. S. Geological Survey.

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Why So Many Price Changes Were Made

Careful Survey of Conditions During 1923 Proves the Law of Supply and Demand Absolutely Controlled All Fluctuations

By Andrew M. Rowley

Why was it that during 1923 the price of crude oil was changed in various oil producing fields of the United States on 105 days out of the 365 in the year? What caused so many fluctuations in the price of a commodity which forms the very backbone of the commercial, industrial and even national life of the United States and which is so vital a part in the welfare of the people of this nation? What are the reasons for advancing the price of crude oil at any time and why are these prices reduced from time to time?

These questions doubtless have interested many persons during the past year, both those in public life and the others of us who are interested from the standpoint as consumers because everyone in the United States is a user of petroleum or its products in some form or other. Petroleum products help to make the new baby comfortable and healthy and are used as an aid in embalming, so we use it coming and going. Naturally everyone is interested in knowing the whys and wherefores of these price changes and everyone deserves to know the answers to the questions cited.

First, there never was another period in the entire history of the oil industry such as that experienced during 1923.

Since the bringing in of the Drake well, the first commercial oil well in the world, in 1859, or more than 64 years ago, there have been just 16 oil fields in the United States which have attained a maximum daily rate of production in excess of 100,000 bbls. Of these 16 pools covering the period of 64 years, eight or just one-half, reached their peaks of output within a period of seven months in 1923.

Big Business Achievement

That the American oil industry was able to handle this unprecedented overproduction, store this oil for future needs and conserve it for the time when the public will need it, is one of the greatest business achievements of modern times. It required the erection of millions of barrels of steel and concrete storage to hold this flood of oil, the laying of miles of pipe lines to transport the oil, the building of tank cars, and the placing into service of all available tanker tonnage.

When it is considered this was accomplished during a period of great depression in the oil industry, caused by this extraordinary and unexpected overproduction, the feat is all the more remarkable. Those seven months during 1923 when as many flush fields poured forth their hundreds of thousands of barrels of oil a day as had done so during a period of 64 years previously, probably will never be equaled again in the history of the oil business. But it is just such things as that that the oil man is facing daily in his business. He can never tell what tomorrow will bring forth. He never knows when someone will strike a big pool of oil whose production will have a depressing effect upon prices.

Outlook Bright at Start

Conditions at the beginning of 1923 seemed bright for a prosperous year in the oil industry. The consumption of crude petroleum in January almost equalled production and exceeded production in February and March. It was only slightly under production in April. The amount of crude oil in storage was only 35.7 per cent of requirements for the year and eight per cent less than the average as compared to requirements for the past 15 years. There was no big production in sight outside of California and the production there about the first of the year was slightly more than ordinary marketing requirements, the output of all the fields in California averaging 530,885 bbls. daily in January.

With these conditions prevailing at the first of the year, it was found necessary to increase the prices of crude oil in all fields except California, because the amount being produced was less than the requirements. There is only one way to make men drill for oil and that is to increase the prices of the product. More oil was needed in the areas outside of California because of the greatly increased demand coming from all sections and the large purchasing companies were forced to raise their posted prices for crude oil to get more drilling done.

Change Came in April

The big change in the entire situation was realized in April when the possibilities of California became plainly evident. The flush fields of the State—Santa Fe Springs, Huntington Beach and Long Beach, were rapidly throwing greatly increased amounts of oil upon the market with no indication in sight of any decline. Production of California had jumped from 530,885, the average during January, to a daily average of 689,865 bbls. during April, an increase in output of 158,980 bbls. a day.

California's production had exceeded 100,000,000 bbls. a year only on six occasions from the beginning of oil development in that State, which dated back many years. Crude oil stocks in storage in California had been declining steadily from 1915 to 1919, when there was a slight increase. They continued to decline during 1920 when they were drawn upon to the extent of 11,350,000 bbls. leaving 19,618,846 bbls. on hand on January 1, 1921. In 1921, with production approximately 9,000,000 bbls. greater than during the previous year, crude oil stocks increased and at the end of the year there was 31,556,277 bbls. on hand.

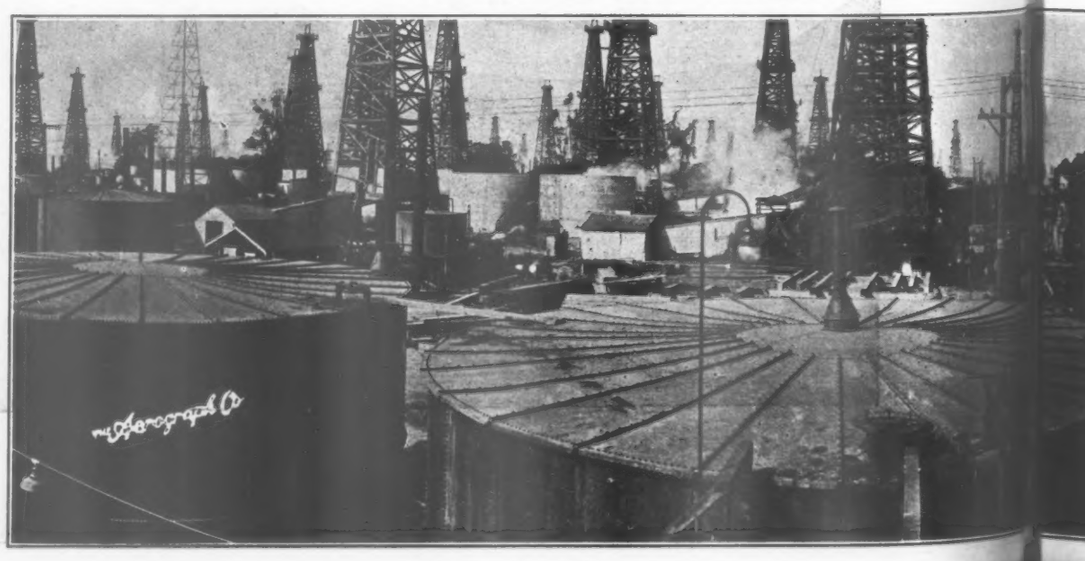
Consequently, it seemed California would be able to absorb most of the oil it was producing at the first of the year as it had delivered to consumers 119,370,518 bbls. of crude during 1922.

California in a New Role

Previous to 1923, California had supplied little oil to markets outside of the so-called Pacific Coast province, which included California, Oregon, Washington, Nevada, Arizona, the west coast of South America, and the Orient. The light oil heretofore produced could not compete with Mid-Continent or light Mexican crude in the eastern markets, because of the low gasoline content and high transportation charges. This situation was changed with the advent of the light oil from the Los Angeles Basin fields. This oil had a gasoline content of approximately 25 per cent as against 10 per cent for the light oil from the older fields. Furthermore, the Los Angeles Basin fields were situated close to tidewater, so that crude could be delivered aboard tankers at slight cost. The transportation charges by tankers through the Panama Canal to Atlantic ports compared favorably with the pipe line and other charges on Mid-Continent crude to Atlantic refineries. Mexican light crude production had declined rapidly and California crude commenced to replace this. In January, 1,143,000 bbls. passed through the Panama Canal, bound mainly for Atlantic Coast refineries. The Canal shipments increased rapidly and during September approximately 7,000,000 bbls. of California oil (crude and refined, passed eastward through the Canal. As an after-

	United States					Oklahoma-Kansas-North		
	Production	Consumption	Stocks	Imports	Exports	Production	Stock	Price
Jan. 1			253,475,000				131,194	
Jan.	54,636,463	53,902,000	258,059,000	7,307,000	762,000	20,278,729	130,310	$1.53
Feb.	49,957,912	51,681,000	260,026,000	6,199,000	681,000	18,121,656	139,091	1.91
Mar.	57,328,574	60,207,000	263,310,000	8,058,000	1,028,000	20,722,555	130,356	1.99
Apr.	58,343,814	58,019,000	268,925,000	6,617,000	1,511,000	20,619,100	134,777	1.97
May	61,624,103	57,669,000	277,785,000	5,995,000	1,324,000	22,334,303	139,932	1.67
June	62,538,121	55,117,000	288,406,000	5,996,000	2,598,000	22,311,090	145,543	1.58
July	68,004,750	60,875,000	298,172,000	6,915,000	1,547,000	22,486,905	147,561	1.58
Aug.	67,977,242	64,661,000	305,342,000	7,580,000	1,542,000	19,862,275	148,303	1.58
Sept.	66,472,550	61,789,000	312,668,000	6,021,000	1,595,000	18,274,640	151,536	1.47
Oct.	67,782,968	63,177,000	321,972,000	6,825,000	1,315,000	19,288,576	151,657	1.28
Nov.	65,278,605	60,412,000	331,077,000	6,085,000	1,397,000	17,781,880	155,013	1.05
Dec.	58,932,074	63,230,000	333,053,000	8,417,000	2,103,000	17,787,069	154,398	.98
Total	738,877,176	710,739,000	----------	82,015,000	17,400,000	239,867,878	----------	

VIEW OF THE SANTA FE SPRINGS FIELD IN CALIFOR URI



math of the war construction, a large fleet of tankers was available

In all, approximately 64,000,000 bbls. of light crude and refined oil passed eastward through the Panama Canal during the year.

Despite the increased demand for petroleum products throughout the United States, the crude oil purchasing companies in the areas east of California found that their stocks of crude in storage were beginning to pile up in the spring at a time when it ordinarily would have been expected the demands for gasoline would be drawing upon these stocks. Consumption of crude petroleum was increasing rapidly everywhere in the country but the oil men in the Eastern, Central West and Mid-Continent Fields were facing greater difficulties daily in disposing of their oil because their market—the great consuming area in the eastern part of the United States—was being taken away from them.

Sought Eastern Markets

California, prior to 1923, had never been a factor in the crude or gasoline markets in the eastern area of the United States. But when production of the flush fields near Los Angeles continued to mount by leaps and bounds and the output of crude throughout the State continued to break all previous high records, California oil men had to find a market for their production and they turned to the fertile consuming field of the East.

The oil produced in the fields near Los Angeles was of a higher gravity than that from older fields of California —that is, it contained a greater amount of gasoline. The refineries in the eastern part of the United States needed crude which would yield a good percentage of gasoline. They were not getting as much as formerly from Mexico and vast quantities of California crude was available at lower prices than Mid-Continent crude could be delivered for along the Atlantic seaboard. It was but natural for the eastern refiners to buy California crude and that is what they did to a great extent.

California crude prices were considerably below those for similar grades of oil in Oklahoma, Kansas and North Texas because there was a surplus of oil in California and because the production per well there was so very much greater than the average production per well in the three other States named. Gusher wells which started with a production of from 5,000 to 18,000 bbls. a day, were being completed weekly in California. It needs no long explanation to show a man can sell oil cheaper when he has a well flowing 5,000 bbls. or more a day than another man whose well is making 500 bbls. a day or less.

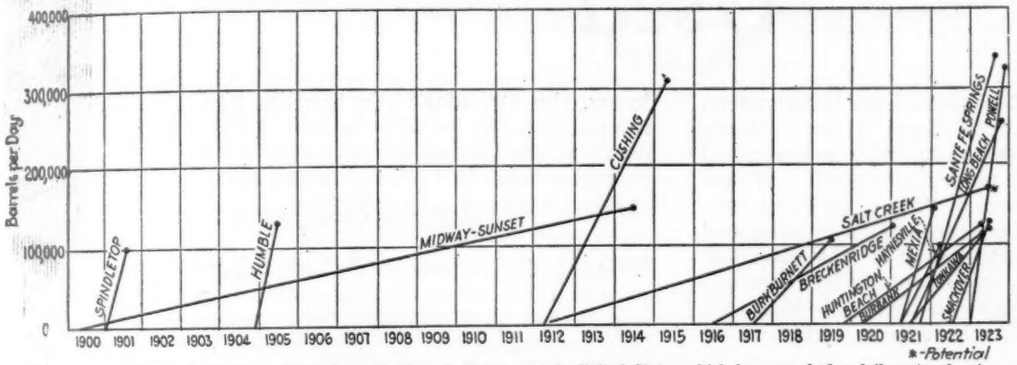
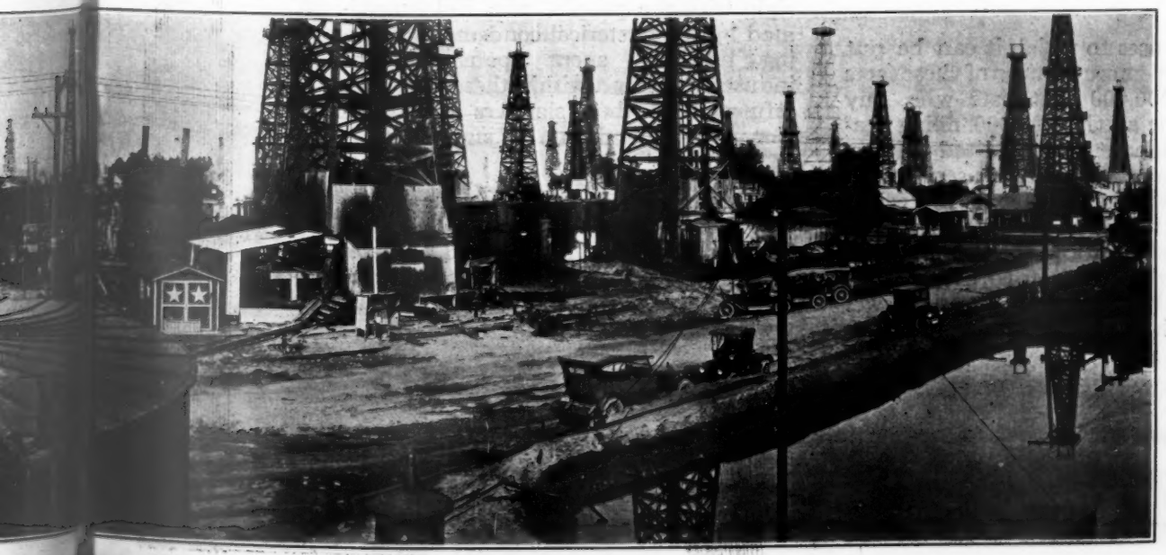


Chart showing dates of discovery and peak production of all oil pools in United States which have reached a daily rate of output exceeding 100,000 bbls. —Courtesy Joseph E. Pogue.

Prices	California Production	California Shipments	California Stocks	Prices	Powell Production	Stocks East Cent. Tex.	California Crude at Eastern Refinery	Okla.-Kan. & N. Tex. Crude at Eastern Refinery
			61,184,928			16,262,055		
$1.53	16,457,445	2,798,000	62,635,558	$1.12	January	16,420,929	$2.52	$2.60
1.91	16,426,759	4,480,000	64,812,395	1.07	to	15,280,581	2.47	2.98
1.99	19,608,192	5,508,000	66,593,571	1.07	May	16,368,567	2.47	3.06
1.97	20,695,959	8,036,000	68,937,459	.94	Inclusive	16,260,988	2.34	3.04
1.67	21,535,365	9,052,000	69,480,405	.88	30,000	16,190,950	2.28	2.74
1.58	22,667,106	9,527,000	72,637,147	.88	445,329	16,049,651	2.28	2.65
1.58	25,262,082	9,382,000	78,655,604	.88	2,184,942	17,639,042	2.28	2.65
1.58	26,440,005	8,543,000	83,123,835	.88	3,848,897	17,223,638	2.28	2.65
1.47	25,762,487	8,995,000	85,496,609	.88	5,170,500	20,469,293	2.28	2.54
1.28	24,576,400	8,267,000	88,349,550	.75	7,681,614	24,679,300	2.15	2.35
1.05	22,397,848	9,234,000	92,081,143	.71	8,278,800	27,114,806	2.11	2.12
.98	21,899,247	8,338,000	91,925,153	.71	2,957,741	27,914,696	2.11	2.05
	263,728,895	92,160,000			30,597,824			

DURING THE PERIOD OF ITS GREATEST FLUSH PRODUCTION



California Oil Cheaper

Freight rates by tanker from California ports to Atlantic Coast ports of the United States varied during 1923. One witness before the Senate Committee on Manufactures testified that in January of last year it cost his company approximately 75 cents a bbl. to deliver oil from California to Atlantic Coast ports, that figure including a 25-cent Panama Canal toll. However, for the purpose of comparison, we will take an average freight charge of 90 cents a barrel for crude and 25 cents a barrel for toll, making a total of $1.15 per barrel. The pipe line charge from the well in California to the boat would average approximately 25 cents a barrel, making a total average cost of $1.40 per barrel from the well in California to the refinery in the East. This rate possibly is high. It is quite high for January of 1923 and November of that year, the tanker rate in November being 75 cents a barrel.

But even considering the high average cost per barrel for transportation from the well to the refinery in the East, California crude could be delivered in the Eastern part of this country at prices considerably cheaper than could Oklahoma, Kansas and North Texas crude, considering crude from this part of the Mid-Continent territory was sent East by pipe line as a major part of it was. Pipe line costs include a 20-cent gathering charge in the field, a charge of 76¾ cents a barrel for transporting the oil and a marketing charge of 10 cents a barrel, a total charge of approximately $1.07 a barrel.

What Table Shows

The table accompanying this article shows the cost of California crude ranging from 28 to 31.9 degrees gravity, at the Eastern refinery and the cost at the refinery of crude from Oklahoma, Kansas and North Texas. It shows in itself why the oil men in that area of the Mid-Continent were unable to dispose of the amount of oil they had expected to sell in the East. It tells why stocks of crude petroleum continued to pile up in Oklahoma, Kansas and North Texas, increasing more than 23,000,000 bbls. during the year. And this in the face of the fact it became necessary to place proration in effect in this Mid-Continent area, proration being a regulation observed by the purchasing companies under which they would buy only a part of the oil produced and would not buy any new production, that is oil from new wells.

Crude oil stocks in California increased only 30,740,225 bbls. during 1923, while its production increased 124,102,019 bbls. Its shipments of crude and refined oils amounted to 92,160,000 bbls. during the year. That is the answer as to why prices of crude oil in the fields of the United States slumped often and rapidly during 1923. That is the reason gasoline was so cheap last year. In Oklahoma, Kansas and North Texas, from June 26, 1923 until the latter part of the year, proration was in effect and the buyers of crude were unable to handle the amount being produced because their storage was limited and they had no market to dispose of the oil being brought to the surface.

Reason for Cheap Gasoline

Cheap crude makes cheap gasoline. Producers of crude oil in Oklahoma were forced to sell their product wherever they could find a buyer because a large number of them were financially unable to build costly storage. The refiners were in much the same position. They had run large quantities of crude oil through their stills early in the year on the expectation of having a great demand to supply. They were preparing for the increased consumption which was almost a certainty and were getting into a position to be able to supply these requirements.

Gasoline made in the eastern refineries

(Continued on Page 84-C)

Of No Value Unless Used

WHOLE libraries have been written about oil from three volume treatises to handbooks you could stuff in your vest pocket; miles of statistics and acres of "dope" on every conceivable angle of production, refining and marketing, yet most of it has gone unread and uncomprehended by the world at large because so intensely technical that none but the expert could understand it.

One of the most universally used commodities, it has been least known as to its origin, its production and its manufacture. Around this popular ignorance of the subject has grown up a veritable mythology, a mountain of mystery and suspicion that has defied the truth to penetrate it.

To dissolve this mystery, to inform the public, to place the oil industry in its true position as one of the chief agencies of modern progress and civilization, the information about oil contained in this issue has been compiled. It is at the disposal of oil men to use it to the best advantage. *It will be of no value unless it is used.*

Among the uses to which it can be put is, first, the communication of these facts to the 15,000,000 motorists who buy their gasoline at the 100,000 filling stations throughout the United States. Read by attendants at these service stations they will be instructed in correct answers to the questions asked by their customers when prices change. Instead of allowing the customer to depart with a shrug of the shoulders or an answer that tells him nothing he wants to know, the attendant who studies this information will be able to talk intelligently of his products and to satisfy the customer that effect follows cause in the gasoline business as in any other.

Oil marketing companies desiring to prepare popular advertising are invited to inform their publicity departments that they are welcome to help themselves to the fundamental facts contained in this publication. It has been prepared to meet the inquiries of the man standing without the industry rather than from the viewpoint of the man within it, the first essential in effective advertising. You must first interest, and then answer the purchasing public.

This is an age of investigations and the oil industry is a favorite target. Oil men can prepare themselves for the witness stand by perusing this information, can marshal their arguments upon *the official figures* and the facts thus presented. They can challenge their critics and overwhelm them with the naked truth.

Associations and organizations of oil men who wish to have their business placed right with the people, who feel humiliated by the hysterical condemnation being baselessly spent upon an entire industry, will find within these pages the refutation of these slanders and suspicions, plainly and forcibly stated.

In its long years of service to the industry The Oil and Gas Journal honestly believes it has never attempted a greater or more valuable labor than the preparation and publication of The Oil Industry's Answer.

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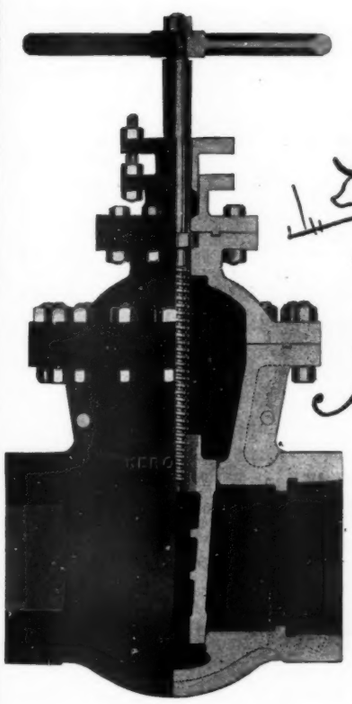

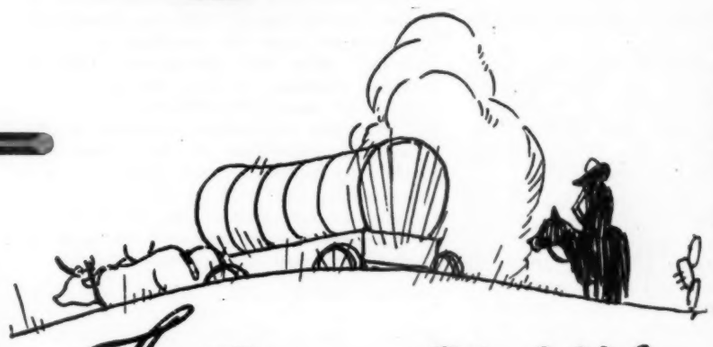

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Prosperity Largely Dependent on Oil

Vast Sum of Money Needed Annually to Procure New Production Necessary to General Progress of Nation's Business

By Charles E. Bowles

INDUSTRY NEEDS $500,000,000 YEARLY

If the petroleum industry is to continue to grow during the next five years as it has during the past five, which growth has been a reflection of the growth of the other industries of the United States that are absolutely dependent upon the products of petroleum, then the petroleum industry must continue to have the use, every year, of about $500,000,000.

And any substantial reduction in this amount, regardless of the reason why the new money is not forthcoming, and especially that part which should come from the investing public, will be quickly reflected in an impaired efficiency of the industries of the United States.

During the year 1923 the slightly less than 300,000 oil wells in the United States produced about 735,000,000 barrels of crude oil, according to the United States Geological Survey. And during the year 1922 about 285,000 wells produced about 557,000,000 barrels. In round numbers, therefore, the crude oil production in 1923 was 178,000,000 barrels greater than in 1922.

The Increase in Production

But 178,000,000 barrels is only part of the story—and in order to see something of what this 178,000,000 barrels of "increased production" really means, and what it cost to get it, let us turn to the accompanying table—and start with the year 1913.

In that year the total production of the United States was 248,000,000 barrels, and if there had not been a single oil well drilled in the United States in 1914, the total oil production for 1914 would have been about 20 per cent less than in 1913. In other words, the average decline or depletion of **all of the wells** in the United States that were producing during 1913 was about 20 per cent during 1914. This means that if no wells had been drilled during 1914 the wells that during 1913 produced 248,000,000 barrels would have produced during 1914 about 200,000,000 barrels.

* * *

However, during 1914 about 21,170 producing wells and dry holes were drilled, with the result that the production for 1914 was 265,000,000 barrels, instead of 200,000,000 barrels, which is about what it would have been if no new wells had been drilled during 1914. It is perfectly fair to include the "dry holes" with the producing wells, as dry holes are an inescapable part of the cost of producing crude oil. No account of gas wells is taken in this article.

Wells Drilled During 1914

As the production for 1914 was 265,000,000 barrels, instead of 200,000,000 barrels, and as 21,170 wells were drilled during 1914, it is logical to conclude that the drilling of these 21,170 wells resulted in bringing the production up from 200,000,000 barrels to 265,000,000 barrels. In other words, 21,170 wells account for 65,000,000 barrels out of the total production for 1914.

* * *

In arriving at the "estimated cost per well," shown in the sixth column of the table, full consideration has been given to the different conditions surrounding the production of oil in the different fields, as well as to the changes in these conditions during the 10 years under consideration. These estimated costs per well have purposely been made conservative, and if it were possible to ascertain the cost of every producing well and every dry hole drilled in the United States from January 1, 1914, to December 31, 1923, the accompanying estimate of their aggregate cost, about three and a half billion dollars, would undoubtedly be substantially less than the price actually paid. For example, in arriving at the average cost for 1923 all of the wells drilled east of the Mississippi River were figured at $10,000 each; those in the Mid-Continent and Gulf Coast at $25,000 each; those in the Rocky Mountain area at $30,000 each, and those in California at $75,000 each. Slightly less than 1,000 wells were drilled in California in 1923, and the estimated aggregate cost of $75,000,000 is undoubtedly far below their actual cost.

Estimated Cost Per Well

On the above basis, in 1914, the "new production," about 65,000,000 barrels, cost about $212,000,000, or about $3.30 per barrel. And right here is one of the vital facts in connection with the production of crude oil about which the general public knows very little: That out of the 1914 production of 265,000,000 barrels, about 200,000,000 came from wells drilled in 1913 and previously, clear back to the oldest producing well, and that almost all of this 200,000,000 barrels came from "pumped" wells as few wells "flow" longer than a year.

* * *

For the sake of illustration, let us suppose that after the wells were completed it cost 50 cents a barrel to bring this oil to the surface, or $100,000,000 for the 200,000,000 barrels. Then contrast this cost with the $212,000,000 that it cost to produce the 65,000,000 barrels of "new production" in 1914—and you get a clear vision not only of the necessity of bringing in "new" production each year, but of what it costs to bring it in, as compared with handling the "old" production.

Cost of New Production

Let us now consider the year 1915. In 1914 the production was 265,000,000 barrels. Deducting 20 per cent from the 1914 production in order to arrive at what the wells drilled in 1914 and previously would have produced in 1915 if no new wells had been drilled in 1915, we have 213,000,000 barrels as the estimated production for 1915. However, in 1915 the actual production was 281,000,000 barrels, or 68,000,000 more than would have been produced had no new wells been drilled. But during 1915 there were 12,359 producing wells and dry holes drilled, therefore these wells can properly be credited with producing the 68,000,000 barrels. On the basis of an average cost of $10,000 per well, these 12,359 wells cost about $123,000,000.

The decline in drilling in 1915 (12,359 wells) compared with 1914 (21,170 wells) is due to the flood of oil from the Cushing Field which reached its peak of 300,000 barrels a day in April, 1915.

Dividing the total production for 1915 (281,000,000 barrels) into the output from wells drilled in 1914 and previously (213,000,000 barrels) and the output from wells drilled in 1915 (68,000,000 barrels) we find that on the basis of 50 cents a barrel the 213,000,000 barrels of old production cost $106,000,000 while the 68,000,000 barrels of new production cost $123,000,000.

* * *

From 1914 to the end of 1919, which six years covers the entire period of the World War, our production of crude oil grew slowly, whether measured in terms of "increased production" (the difference between any two consecutive years in the second column) or "new production," as shown in the fourth column.

Oil During World War

Due to oil's strategic position, the powerful emphasis of which was one of the outstanding results of the World War, and due to the almost universally favorable attitude of "the people" toward oil, and due to the widespread belief of an impending "oil shortage," the period following the close of the war was marked by "peak" prices for crude oil in every producing area in the United States. The result was that the number of wells drilled increased from 23,291 in 1918 to 27,171 in 1919 and to 31,099 in 1920.

Let us analyze what happened in 1920. The production in 1919 was 378,000,000 barrels. Deducting 20 per cent for decline, we find that the wells that produced 378,000,000 barrels in 1919 would have produced only about 303,000,000 barrels in 1920, if no new wells had been drilled in 1920. However, in 1920 there were 31,099 wells drilled, with the result that the production for the year was 442,000,000 barrels, of which 303,000,000 barrels represent the production from the wells drilled in 1919 and previously, while 139,000,000 barrels represent the "new production" brought in in 1920. Figuring "old production" at 50 cents a barrel makes the 303,000,000 barrels cost $151,000,000, while the 139,000,000 barrels of "new production" cost about $545,000,000.

* * *

And now let us see what happened in 1923. While the "increased production" of 1923 over 1922 was about 178,000,000 barrels the "new production" brought in in 1923 was very probably close to 289,000,000 barrels, as shown by the accompanying table.

What Happened During 1923

In 1922 the production of the United States was 557,000,000 barrels. Deducting 20 per cent for decline, we have 446,000,000 barrels as the estimated production for the year 1923 from all of the wells drilled in 1922 and previously. However, during 1923 the total production of the United States amounted to about 735,000,000 barrels, and of this 735,000,000 barrels it is fair to assume that about 446,000,000 came from wells drilled in 1922 and previously, while about 289,000,000 barrels came from wells drilled in 1923.

On the basis of 50 cents a barrel "lifting cost," the 446,000,000 barrels coming from the old wells during 1923 cost $223,000,000, while the 289,000,000 barrels of oil from the wells drilled during 1923 cost about $500,000,000. In other words, during 1923, it cost about $223,000,000 to produce 446,000,000 barrels of oil from "old wells" and about $500,000,000 to produce 289,000,000 barrels from "new wells."

It is fully conceded in advance that the above figures are only approximately accurate—but their use is fully justified as they make it possible to "visualize" the tremendous cost of getting "new production," year after year, without which the petroleum industry would collapse within a very few years. The great mass of the American people little realize what "new production" means to the oil man—and what it costs him to get it.

* * *

Cost of New Wells About $500,000,000

Of the 4,124,000,000 barrels of oil produced in the United States during the last 10 years it is probably true that not less than about 1,200,000,000 barrels, or about 30 per cent of the total, represents "new production" added year by year. During these 10 years a total of about 222,000 producing wells and dry holes were drilled, or an average of about 22,000 wells per year. Figured on a conservative basis these 222,000 wells cost probably close to three-and-a-half billion dollars

During the last five years the "new production," over 800,000,000 barrels, has cost over two-and-a-quarter billion dollars—and if this two-and-a-quarter billion dollars hadn't been spent to drill about 120,000 new wells the production of the United States, beginning with 285,000,000 barrels for the year 1919, would have dwindled to probably 150,000,000 barrels by the end of 1923.

In other words, during the last five years we have produced about 2,500,000,000 barrels of oil, of which about 800,000,000 barrels was "new production," to obtain which required 120,000 wells costing about two-and-a-quarter billion dollars.

Viewed from another angle, if we hadn't drilled a single well from January 1, 1919 to date, our production of crude oil during this five years from January 1, 1919 to December 31, 1923, would have been in the neighborhood of about one billion barrels—instead of 2,500,000,000 as it has been.

What the use of the gasoline, kerosene, lubricating oil, fuel oil and other products from this 2,500,000,000 barrels of crude oil has been worth to the industries of the United States, and of the world, is left to your own judgment to decide.

Additional finance is one of the fundamental needs of every growing, expanding industry—and the bigger the industry and the faster it grows the bigger the blocks of additional money that it needs.

To finance the "new production" of crude oil that is absolutely essential to meet the constantly growing demands of the other great industries of the United States has, during the last five years, been requiring about five hundred million dollars a year. There are just three ways to get this half-billion dollars each year: One is for the oil companies to "plow back" $500,000,000 a year "into the business"—the other is for "the public" to furnish $500,000,000 a year through the purchase of the stocks and bonds of the oil companies—the third way is a compromise, whereby the oil companies will furnish part of the $500,000,000 out of their own earning power, and the investing public will furnish the remainder.

TEN-YEAR RECORD OF "OLD" AND "NEW" PRODUCTION

Year—	Production Barrels	Estimated Prod. Next Year—No Wells Drilled	Estimated Bbls. of New Prod.	Oil Wells and Dry Holes Drilled	Estimated Cost per Well	Estimated Cost of New Wells	Av. Cost per Bbl. New Prod.
1913	248,446,000	200,000,000	---------	-----	------	----------	----
1914	265,763,000	213,000,000	65,000,000	21,170	$10,000	$212,000,000	$3.30
1915	281,104,000	225,000,000	68,000,000	12,359	10,000	123,000,000	1.80
1916	300,767,000	241,000,000	75,000,000	22,692	12,000	270,000,000	3.60
1917	335,316,000	268,000,000	94,000,000	21,117	13,000	275,000,000	2.90
1918	355,928,000	285,000,000	87,000,000	23,291	14,000	335,000,000	3.85
1919	378,367,000	303,000,000	93,000,000	27,171	15,000	415,000,000	4.50
1920	442,929,000	354,000,000	139,000,000	31,099	17,500	545,000,000	3.90
1921	472,183,000	378,000,000	118,000,000	19,041	17,500	335,000,000	2.85
1922	557,531,000	446,000,000	179,000,000	22,647	20,000	450,000,000	2.50
1923	735,000,000	588,000,000	289,000,000	22,089	22,500	500,000,000	1.72
Ttl.	**4,124,888,000**	----------	**1,207,000,000**	**222,676**	-----	**$3,460,000,000**	**$2.87**

APPRECIATION OF GASOLINE MIGHT NOT BE ALTOGETHER AMISS, SENATOR

In the Saturday Evening Post of February 25, (Page 51) is a page advertisement of the "Improved Packard Six Touring Car," in which is reprinted a letter to the Packard company from United States Senator Jones of the State of Washington.

The letter was complimentary, and we have no doubt that the compliment was well merited. We feel that while the Senator was writing in an appreciative way to the maker of an automobile, he was also, perhaps consciously penning his appreciation of the wonderful fuel which drove the car on the 9,000-mile trip of which he writes. Let us asume that the Senator had a good thought for the gasoline while he was having a good thought for the car, and with this in mind, invite him to write a letter of appreciation to The Petroleum Industry of America along the same lines as that which he sent to the automobile makers.

He can use the same form, with necessary variations, and we have taken the liberty to "lay out" a letter which the Senator, being a busy man, might instruct his secretary to copy. It would then need only his signature, and if he will send it to The Oil and Gas Journal, we promise to give it a very prominent position and assure him it will be widely read.

Below will be found Senator Jones' letter to the Packard company and following it the letter we beg to suggest that he write to the large body of his fellow Americans who are engaged in the oil business.

The Senator's Letter

"I feel that you should know of the performance of my Packard Six, that I secured from you a little over two years ago.

"I drove from Washington, D. C., to Seattle, by way of California, leaving here April 9, last. I went into the Yosemite on the trip and made about 5,200 miles. I averaged 18½ miles to the gal'on of gasoline on the entire trip. From Corning to Redding, California, a distance of 50 miles, I made on 2 gallons of gasoline; and from Corning to Seattle, Washington, something over 759 miles, averaged 22½ miles to the gal'on.

"Leaving Seattle October 13, I drove back to Washington. Going through Wqoming we had very bad roads and had to go much of the time in second and sometimes in low. This trip was over 3,800 miles and I averaged over 18½ miles to the gallon. From Walla Walla, Washington, to Ontario, Oregon, over the Blue Mountains, I made 240 miles on 10 gallons of gasoline.

"Mrs. Jones was with me on the trip and the back of the car was quite well filled with baggage."

"WESLEY JONES,
"United States Senate.
"Washington, D. C."

"November 24, 1923.

More Appreciation

Here is the letter which we ask Senator Jones to sign and broadcast to the oil industry:

"I feel that you should know of the performance of my motor fuel, the product of your industry, which I have been able to buy at almost every prominent street corner and along every country road; on prairie and desert; in valley and on mountain top, from the Potomac to Puget Sound and back.

"I drove a six-cylinder car from Washington, D. C. to Seattle by way of California, leaving here April 9 last. I went into the Yosemite on the trip and made 5,200 miles. I averaged 18½ miles for about 23 cents worth of gasoline, or about 1¼c per mile. From Corning to Redding, California, a distance of 50 miles, I made on 46 cents worth of gasoline, or at the rate of less than 1 cent a mile. From Corning to Seattle, Washington, something like 759 miles, I averaged 22½ miles for every 23 cents worth of gasoline.

"Leaving Seattle, October 13, I drove back to Washington, D. C. Going through Wyoming we had very bad roads and had to go much of the time in second and sometimes in low. This trip was over 3,800 miles. I averaged over 18½ miles to the gal'on of gasoline and as the price of the fuel had dropped, I was enabled to make this long distance at the rate of about 1 cent a mile for a part of it and a shade over a cent for the remainder of it. From Walla Walla, Washington, to Ontario, Oregon, I made 240 miles on $1.75 worth of gasoline or at the rate of a mile and a fifth for a cent.

"Mrs. Jones was with me on the trip, so the cost of fuel was five-eighths of a cent per passenger per mile on the outgoing trip and a half cent a mile on the trip back to Washington.

"I could not he'p thinking that five passengers in a big car making a similar trip and dividing the fuel costs between them could have done so at the rate of about 4 miles for a cent each, and on the trip back could have made it at the rate of 5 miles for a cent each.

"But there were only two of us and I paid the bills, and I wish to go on record as saying that the cheapest thing about the whole 9,000-mile trip was the gasoline, and to say that while we found all kinds of food and lodgings en route and all kinds of roads, we found only one kind of gasoline and it was good. I might paraphrase and say that all gasoline is good gasoline, but some is better than others. We could always get it, and the price was low when it was highest.

"I wish to thank the oil industry, the producer, the pipe line company, the refiner, the marketer and the filling station man for the wonderful service given me and to compliment the whole industry on the amazing system that makes this service so easily obtainable in such good quality at such a low cost."

AFTER FINDING PRODUCTION

The production or outlet for crude oil from any pool is dependent, first, upon the ability of the producer to store the oil on his lease; second, upon the ability of the pipe line company to run the oil; third, upon the ability of the purchaser or refiner to store the oil, and, fourth, upon the ability of the refiner to run the oil through his stills and dispose of the resultant refined products.

Oil Men Are Entitled to Good Returns

Spent at Least $581,707,000 on Dry Holes in 14 Years in Their Efforts to Maintain Supply of Crude Petroleum

By James McIntyre

The Oil and Gas Journal estimated that no less than $581,707,000 has been spent in dry holes in the States east of California from 1910 to 1923, both years included. This is not said to discourage men from engaging in the oil business, but to show why it is reasonable for oil men to expect a big return when their hazardous investments meet with success.

The percentage of dry holes drilled in the fields east of California has increased greatly in the past 14 years.

Back in 1910 when most of the drilling was comparatively shallow, and when a 2,500-foot hole was called deep, men had better luck in finding oil than in recent years, when, after all the known shallower sands had been explored, they "went down for the deep stuff."

One reason for the increase in dry holes has been the tremendous demand for oil products, which resulted in a corresponding effort on the part of oil men to keep the production of crude up to the requirements of refiners.

Thousands of wells have been drilled in remote places in the hope of opening new pools. So many of these exploration or wildcat wells resulted in new pools and fields that the industry has been well able to satisfy the demands made upon it but the great drilling campaign meant many a failure along with the successes.

Many Failures in 1910

In the year 1910, 13,656 wells were completed, and of these 17.8 per cent were dry. In 1913 the completed wells had increased to 24,932, and the percentage of dry holes increased to 18.5. The following year the dry holes represented 23.7 per cent of all the wells completed and in 1915 they increased to 24.1 per cent. In 1916 there was a higher percentage of successful wells, and the dry hole percentage fell to 16.1.

It was following this that the real deep drilling campaign in the Mid-Continent and Rocky Mountain region opened and that the wildcat operator began to extend his activities farther from the center of oil production. In 1917 the dry holes represented 21.1 per cent of the completed wells and thereafter the percentage was always above 20. In the 14 years from 1910 to 1923, both inclusive, 305,465 wells were completed east of California and of these 64,633 were dry, representing a percentage of 22.1 for the entire period.

How much these failures cost the industry cannot be stated with positive accuracy. Some idea can be given as to cost increase through the years when it is known that one oil company in Oklahoma which drilled its wells in that State at an average cost of $3,619 per well in 1912, paid an average of $35,509 per well in 1921, the year of biggest prices, and up to June 30, 1923, paid $23,362 per well as an average for last year.

It had not yet completed its average price per well for the whole year 1923 up to a few days ago when these figures were secured from it.

The figures show that it was costing this one company, which is a large producing organization, most economically administered, between seven and eight times as much to complete a well in 1923 as in 1912 and at the same time its chances of getting an oil well were no better last year than they were 11 years previously.

Don't Know When to Quit

One feature of dry hole drilling is that so many of them are carried farther down than their original objective depth. A man drills for a certain sand which he knows should lie at 2,500 feet. He drills through it, finding no oil or gas. He has expended $25,000 on the hole and it is, thus far, a complete loss except for what salvage he can recover. In many cases he drills deeper in the hope of finding an oil sand at a lower level. Many notable pools have been opened by some operators having done this, which is what spurs others on to go as deep as their purse and credit will permit. A case in point is offered this week in Roger Mills County, in the western part of Oklahoma, many miles from any production. The Roxana Petroleum Corp. is abandoning a rotary test at 4,054 feet. It was not expected that this test, which was drilled on the advice of good geologists would be drilled deeper than 3,500 feet as at that depth it was expected a considerable thickness of the Pennsylvanian beds would be penetrated, but the Roxana organization went over 500 feet deeper, and this test cost the company $43,000 and it is a dry hole.

$9,000 per Well Conservative

Considering the great increase in the cost of drilling in every field since 1914, and the fact that the deep dry holes of recent years have nearly all been in the Mid-Continental part of the United States where drilling costs are highest, we venture to place an average of $9,000 per well on the dry holes drilled between 1910 and 1923, which would bring the total expenditure on these failures up to the enormous total of $581,707,000, which The Oil and Gas Journal believes a conservative figure.

The Need for Big Returns

Is it any wonder then that oil men expect a big return when they succeed? When a company risks all the way up to $100,000, on a prospect which has, say one chance in five of being a success, should it be subjected to congressional investigations when it can show a good profit at the end of the year?

Below are two tables, one showing the number of completed wells, and the number of dry holes in all the fields east of California from 1910 to 1923 inclusive, and another showing how the dry holes were divided among the different producing divisions of the country east of California from 1915 to 1923.

Figures on California were not included for the reason that in reporting dry holes in that field they are included in the report on abandoned oil wells, which have quit producing.

Wells completed and number and per cent of dry holes in all fields east of California from 1910 to 1923 inclusive:

Year	Wells Comp.	Dry Holes	Pct. dry Holes
1910	13,656	2,436	17.8
1911	13,273	2,297	17.6
1912	16,183	2,564	15.2
1913	24,932	4,612	18.5
1914	22,470	5,337	23.7
1915	13,631	3,587	24.1
1916	23,834	3,993	16.1
1917	22,355	4,718	21.1
1918	24,926	5,733	23.0
1919	28,512	5,756	20.2
1920	33,385	7,375	22.1
1921	21,091	5,013	23.8
1922	23,759	5,329	22.4
1923	23,458	5,883	25.1
Total	305,465	64,633	22.1

Wells completed and number and percentage of dry holes in different fields from 1915 to 1923 inclusive:

	Wells Comp.	Dry Holes	Pct. dry Holes
East. Fields	44,620	7,552	16.1
Central Ohio	6,240	1,895	30.3
Lima	4,544	526	11.1
Indiana	2,630	755	28.7
Kentucky	18,283	3,012	16.5
Tennessee	183	94	51.4
Mississippi	15	12	80.0
Georgia	2	2	100.0
Alabama	2	2	100.0
Illinois	5,537	1,365	24.5
Kansas	25,988	5,692	21.5
Oklahoma	66,913	15,198	22.7
N. Cent. Texas	20,977	4,859	23.2
E. Cent. Texas	1,697	452	26.6
Gulf Coast	12,449	4,687	37.7
N. Louisiana	6,363	1,323	20.8
Arkansas	2,781	356	12.8
*Wyo.-Mont.	2,572	480	18.7
Total	221,796	48,262	21.8

*Six years.

DRILLING COST INCREASES FAR MORE THAN PRICES ASKED FOR GASOLINE

By James McIntyre

It is repeatedly emphasized in this issue of The Oil and Gas Journal that the increased cost of finding the crude oil from which gasoline is made has had no effect whatever on the retail price of that product.

The reader will find on page 93 of the Commerce Year Book of 1922 and a part of 1923 a price schedule showing the percentage of difference in the tank wagon price of gasoline over or under the average price of 1913.

This Government table shows that gasoline went down 17 per cent in price in 1914 and 25 per cent in 1915 and that thereafter it never advanced more than 70 per cent over the 1913 average price and that in 1923 it was only 12 per cent over the price 10 years before.

Now, how about the cost of drilling?

What did the producer pay through those years for the wells out of which the crude oil came from which the gasoline was made?

That is a different story.

It is a well known fact in the oil industry that in any field in the United States the cost of drilling a well to any specified depth was from 200 to 300 per cent higher in 1923 than it was in 1910.

Added to that, the fact that under modern conditions it is necessary to drill deeper to find new producing sands, has added tremendously to the cost of producing oil. The fact that the producer can show a profit even with his drilling costs increased up to 1,000 per cent, without putting the burden of the increased costs onto the ultimate consumer of refined products is one of the marvels of petroleum economics.

One of the largest oil companies in Oklahoma, at the request of The Oil and Gas Journal, made up a schedule showing the average cost per well of the wells it drilled from 1910 to 1922 both years inclusive, and the first half of 1923. It had not completed its cost averages for all of 1923 when the request was made of it to supply the data.

The company is one of the most economically administered of all the large producing organizations and its figures may with safety be said to be representative of the costs of other well managed producing companies in the Mid-Continent that have operated as many years.

The schedule shows that it cost the company over seven times as much to drill its wells in 1923 as in 1912, and that in 1921, the year of highest prices in the oil country, it cost over 11 times as much as in 1912.

In 1921, when the cost of drilling in Oklahoma was 1,021 per cent higher than in 1912, the percentage of increases over 1913 drilling costs was 665, while the percentage of increase in tank wagon price of a gallon of gasoline in 1921 over 1913 was 43.

Below are the figures. They tell a story that is all to the credit of the oil industry:

Average Cost of Drilling Wells in Oklahoma From 1912 to 1923.

	Av. Cost per Well	Per Cent Increase Over 1912	Per Cent Increase in Tank Wagon Price of Gasoline
1912	$ 3,169	----	---
1913	4,667	47	---
1914	6,744	113	*17
1915	8,321	163	*25
1916	6,917	118	21
1917	7,880	149	32
1918	11,144	251	39
1919	21,353	574	42
1920	26,437	734	70
1921	35,509	1,021	43
1922	23,999	654	40
First 6 months in 1923	23,362	637	12

*Decrease.

OIL GREATEST FORCE IN FOREIGN TRADE

The United States produced and imported a total of 808,000,000 barrels in 1923. Of this total income only 100,000,000 barrels of oil, or 12.4 per cent, comprising crude oil and refined products, were exported. It is apparent that while oil exports are important and have a tremendous relation to America's position in the world of trade, they are wholly overshadowed by the meeting of domestic requirements.

It has been claimed that the petroleum industry has been the greatest single force in the extension of the foreign trade of the United States. In the value of products exported it ranks well up with the leaders, contributing a big share to the country's favorable balance of trade. Furthermore, in providing light and heat to the remotest corners of the earth, the American petroleum industry has increased the prestige of this country in foreign lands; it has been a great civilizing influence and it has increased the capacity for purchase of foreign countries.

Not only in the distribution of his products, but in the producing fields of the world is the American oil man a prominent figure. The industry through many separate agencies is engaged in planting American commerce, American influence and American opportunity in many foreign lands.

WHY SO MANY CHANGES IN PRICES WERE MADE

(Continued from Page 81)

from cheap California crude was cheaper than gasoline made from Mid-Continent crude. In addition, large quantities of gasoline were shipped from California to the East and gasoline from California and made from California crude even was shipped from eastern points as far west as Chicago which always had been strictly Oklahoma, Kansas and North Texas marketing territory.

As a result there were large quantities of gasoline on hand in this area of the Mid-Continent territory without any market available for it. Is it any wonder refiners in many instances were willing to sell quantities of this gasoline at prices far below the actual cost of making it? It was this "distress" gasoline which caused such a furor in certain sections when politicians purchased it and reso'd it to the public. The price paid for it did not represent anywhere near its actual cost bu tthe public was told the prices charged by regular dealers were too high. These regular dealers were buying their gasoline on contracts which had been made to protect the patrons of the dealers from a shortage.

Then Came Powell

On top of this situation which had developed in the Mid-Continent Field and which was being experienced in every other oil territory of the United States, the Powell Field in Texas was developed. There had been drilling operations carried on in that section for at least two years, but the Powell Field itself had produced only 30,000 bbls. of crude oil during the first five months of 1923, or less than an average of 200 bbls. a day.

Jumping from a production which for five months had averaged less than 200 bbls. a day, Powell blossomed forth in June with an output of 445,942 bbls. following the discovery there of a big producing sand. The production of the field jumped by leaps and bounds, being one of the most spectacular increases in the history of the petroleum industry. It reached its peak on November 13, with an output of 354 000 bbls. on that day. It produced 8,278,800 bbls. of crude in November and produced 30,597,824 bbls. during the year, all of this except 30 000 bbls. being produced after the first of June.

The advent of Powell with the serious condition already obtaining throughout the Mid-Continent territory as a result of the vast production of California, forced the crude oil buying agencies in Oklahoma, Kansas and North Texas on June 26, 1923, to announce they were compelled to place proration into effect. In other words, they agreed, in order to protect the small producers who were being forced "against the wall," to take a portion of the oil being produced by the wells but to buy no oil from new wells, that is, wells which would be completed after June 26.

Settled Production Vital Factor

The backbone of the oil producing business is the settled production, or the wells which have passed the period of flush production and have settled to a small daily output which is regular and fairly certain. It is the small producer who is hurt most in such a period as prevailed last year because his expense of producing oil is so much greater per barrel than the operator who has wells with a large output. The small operator is unable to build storage to hold his oil and, generally, is forced to sell his oil as it is procured or shut down his wells and enter some other line of business as many did during the depression of 1921.

With proration in effect in Oklahoma, Kansas and North Texas it was natural drilling operations would be reduced to an absolute minimum because the purchasing companies would not take the oil from new wells. This situation is shown in the fact the number of wells completed in Oklahoma, Kansas and North Texas dropped from 1,281 for May to 343 in November.

Summary of Situation

Summarizing the entire situation of the past year, the vast production of a better grade of oil than California had produced formerly and which came from fields located near the ocean, were shipped by tanker around through the Panama Canal to the eastern markets which formerly had depended almost entirely upon Mid-Continent and eastern crude. This reduced the amount of oil the Mid-Continent and eastern producers were able to dispose of and resulted in stocks of crude oil piling up in these areas without a market at the time. This surplus without an adequate demand, caused prices to be lowered. The large quantities of gasoline and other refined oils on hand forced prices of these commodities to low levels. In many instances, refiners in need of cash to continue in business were forced to sacrifice quantities of gasoline at prices under what it actually cost them to produce it. In the Mid-Continent area, a majority of the refiners actually lost money last year. They were forced to continue in business even though losing money to hold their customers and pipe line connections.

Crude oil and gasoline were sold at prices below what it cost to produce them. These prices cannot be taken as a criterion of what prices of these products should be for the prices represent a loss to the producers. No business can long endure such losses. If such prices were to prevail for any long extended period of time, the crude oil producers and refiners would be forced out of business and there would be little or no crude oil or gasoline available. Such a condition would practically wreck the very foundation of business life in the United States for every large business must have petroleum products or it canont endure. How long cou'd any machine be operated without lubricating oil? Just that long would the big industries of the United States continue operations were the petroleum industry to fail to supply these lubricating oils, greases, gasoline and the hundreds of other products used daily by the people of this country.

WHERE INCREASED SUPPLY OF OIL CAME FROM IN PAST TEN YEARS

A diagram prepared by the United States Department of Commerce from tables compiled by the United States Geological Survey shows at a glance the comparatively settled production of the older oil fields since 1913 and the remarkable changes in California and the Mid-Continent.

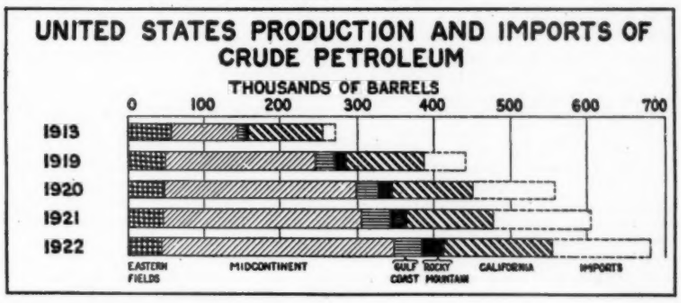
The Eastern fields which in 1913 were credited with a production of approximately 54,500,000 barrels, had dropped to 44,400,000 in 1920, and progressively to 39,841,000 last year.

The Mid-Continent, which produced 84,000,000 in 1913 was producing 250,000,000 in 1920, 8,000,000 more in 1921 and 310,000,000 barrels in 1922, reaching 351,600,000 barrels last year.

The Gulf Coast production, but 8,500,000 in 1913, has been around 37,000,000 barrels for the past three years. The Rocky Mountain fields have grown from 2,500,000 in 1913, to 17,000,000 in 1920, 21,000,000 in 1921 and 29,000,000 in 1922, and reached 45,000,000 last year.

California's sudden spurt is shown by contrasting its 97,000,000 barrels in 1913, 103,000,000 in 1920, 112,000,000 in 1921, and 138,500,000 in 1922 with its 263,700,000 barrels last year.

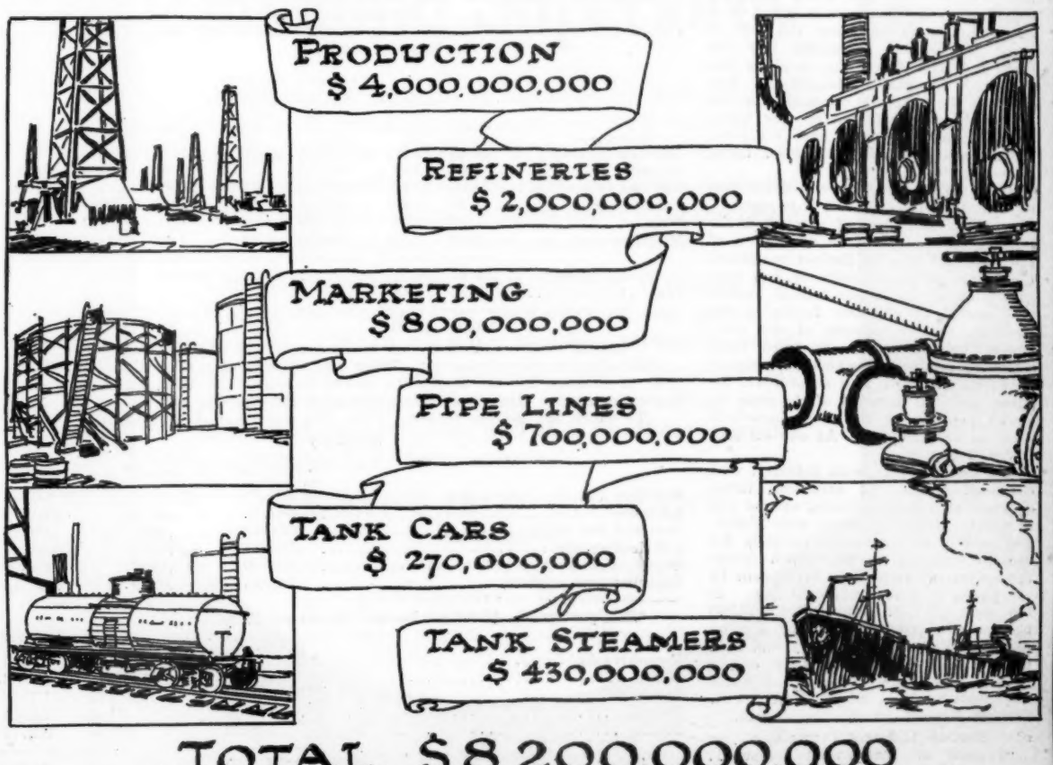
Our imports of crude, which were only 17,000,000 barrels in 1913, were three times as much or 52,000,000 in 1919; twice that, or 106,000,000 in 1920, around 125,000,000 in the next two years and 82,000,000 last year.



OIL BIG CONTRIBUTOR TO OUR FOREIGN TRADE

In the value of products exported, the petroleum industry ranks among the leaders. In 1923 the value of raw cotton exported was $807,102,507, and cotton manufacturers exports totaled $138,000,106. Total exports of petroleum products were $326,599,065, while crude oil exports amounted to $23,111,816. The value of other important exports in 1923 follows:

Iron and steel, $234,357,360; wheat (grain and flour), $204,640,925; animal and fish oils, $158,415,723; leaf tobacco, $152,303,061; meats, $149,967,743; wood and manufactures, $145,960,712; copper and manufactures, $129,178,200; chemicals, $123,154,501; automobiles including chassis, $106,296,437.



Origin of the "Oil Octopus" Tradition

How Anti-"Trust" Agitation Began, the Dissolution by Supreme Court and the Disruption Forced by Competitive Investments

By W. T. Anderson

No statement of the truth about the oil industry would be complete without an analysis of the most persistent popular notion about the oil business—the domination of the "Standard Oil Trust."

Let us begin at the beginning, how this tradition arose.

In the pioneer days along Oil Creek the finding of oil was but the first of the oil man's difficulties. The next was how to get it to market.

Barrels floated on rafts down the Allegheny River to Pittsburgh were the first resort. Transportation by rail came later but levied heavy toll. Then the idea of pumping oil through pipe lines seemed to have solved the difficulty.

But pipe lines cost money to lay and operate. And when the first was laid controversy arose, naturally enough, over the taking of oil from a small army of rival producers. The teamsters who had hauled the barrels to the river or the railroad and the railroads themselves, foreseeing the loss of profitable freight, swelled the agitation against the innovation. Soon the pipe lines became a veritable storm center, with increasing charges that they were being used to dominate the industry.

Individual producers, complaining of injustice, started the bitterest and most persistent battle in American commercial history, the war between the independents and the Standard, the effects of which in the popular mind have lasted to this day, although the original cause has long since disappeared and the Standard Oil Trust itself was dissolved by order of the United States Supreme Court more than 10 years ago.

Since the Dissolution

Since that dissolution, any modern oil man will tell you, the whole Standard organization has been made over. For one thing, there has been the rise of great independent companies like the Gulf and The Texas Co., rivalling the Standard Companies themselves. For another, the separate companies in the Standard group, officered by new blood, ambitious and energetic, have instituted the keenest competition between themselves.

The public, of course, will doubt this as a general statement but it is susceptible of convincing proof through indisputable facts. Since the dissolution of the Standard into 34 distinct companies the whole petroleum industry has been revolutionized by causes wholly outside the control of any one factor in the business, the development of the automotive industry which relegated kerosene, the product on which the original Standard was built, to a subordinate position, and the elevation of the once despised gasoline to the most important place in the industry. As one oil man has well put it:

"In 1906 the petroleum industry, with combined assets not exceeding three-quarters of a billion dollars, existed primarily to supply the world with 33,000,000 barrels of kerosene principally for use in kerosene lamps, which lamps themselves represented an investment by the public of a few million dollars. In the year 1921 it produced 46,312,000 barrels of kerosene, sufficient for all needs, so that if the industry had been called upon only to increase its output to supply the kerosene market it would have been but a turbid backwater in the rushing flood of American commerce.

Entirely Different Proposition

"Instead of that, what happened? The petroleum industry of the gasoline age is no more the petroleum industry of the kerosene age than the great automotive industry of this country is the multiplication of the old village wheelwright laboriously fashioning a democrat wagon. In 1922 the petroleum industry, with combined assets 10 times those of 1906, existed primarily to supply the world with approximately 150,000,000 barrels of gasoline per annum, largely for use in motor vehicles representing an investment by the public of between 10 and 12 billion dollars."

Even the most fabled wealth of the old Standard Oil Trust would have been but a fraction of the money needed to finance this epochal change and expansion of the industry. The consequence was that new capital had to be found, billions of it, from the investing public.

The need for new capital led to the reduction of par value so that where formerly only the wealthy could buy stock selling at $600 to $900 a share, stock split into small denominations came within the reach of popular investments.

This meant, of course, the widest dispersal of the stock of these companies, indeed of all the large oil companies, among a multitude of investors who had never owned Standard or other genuine oil stock.

Capital of Companies Compared

The capital of the various companies in the Standard group, as they are termed, is $1,527,000,000 and the amount invested is put at $3,000,000,000. The capital of the leading independent companies is $1,104,000,000 and the investment in them $2,000,000,000. The foreign companies have a capital of $242,000,000 and an investment of $1,150,000,000.

The total capital of these three groups is $2,873,000,000 and the total investment $6,150,000,000. These figures are for only the leading companies, representing about 60 per cent of the world's total investment.

The introduction of all this new blood into the industry has destroyed the old alignments naturally. It is a case of a king arising who "knew not Joseph." These new investors were interested only in getting returns on their money. They were not sentimentally or financially concerned about ex-associates they never knew. They looked to the managers of their wonderful properties to produce results. The managements, thus spurred to rivalry, thought of the interests of their particular organization first. Soon there were signs that the competition between some of the leading late Standard subsidiaries was as vigorous as any that ever arose between Standard and Independents.

Instances of Keen Rivalry

Among the morsels of gossip rolled upon the tongue of oil men in recent years were rumors as to the inside cause for the Standard of Indiana buying into the Sinclair Pipe Line Company. One story has been that the Indiana wished to fortify itself so as not to be dependent upon the Prairie Pipe Line Co. Then there has been the spectacle of the eastern marketing companies taking advantage of the flood of oil from California and from Powell to place large contracts with Pacific Coast independent producers while the Mid-Continent was forced to shut down for lack of a market for its oil.

Practical oil men know from their own experience that in many fields in the Mid-Continent Standard subsidiaries have been and are active and most aggressive competitors for leases, for oil properties and for oil itself. It is a common saying that they neither give nor receive quarter and employ against each other all the tricks of the trade commonly assumed to be reserved by independents and Standards for the ancient factional warfare. The anxiety to make good with their managements, equally anxious to satisfy stockholders and keep their jobs, is a sufficient explanation as it is in any other business organization in any line.

In the East the Atlantic Refining Co. and the Standard of New York compete in several marketing territories. In the Southwest the Magnolia and the Humble Oil & Refining Co., Standard units, have their own bulk and service stations at the same points in many instances alongside those of The Texas Co., Sinclair Refining Co., Gulf Refining Co. and Cities Service Co.

Too Big to Be Dominated

Signs like these are more convincing than any suspicions to the contrary. Yet they excite comment only among oil men, being unheeded by the unobserving public.

The simple fact is that the oil industry has grown too big for any group, however, powerful, to handle. The growth of such independent companies as the Gulf and The Texas Co. and several others of national reputation and scope would hardly have been possible if the oil business could have been kept a monopoly. If such a monopoly had been possible it is safe to say that it would have made money in 1923 instead of losing it and would have had firmer control of production and refining than the chaotic and disastrous condition of the industry last year suggested. The scene of competition whose distress gasoline following reckless overproduction of crude almost wrecked the industry in 1923 would never have been tolerated by any business organization that could have prevented it, monopoly or no monopoly.

BARREL OF CRUDE COST AT REFINERY AND COST OF REFINING PRODUCTS

In connection with the cost of crude oil delivered at a refinery and the cost of refining it, discussed elsewhere in this issue, the following taken from the testimony before the Senate Committee on Manufactures is of interest.

The witness, R. D. Benson, chairman of the board of the Tide Water Oil Co., was asked: "Have you any figures showing the cost to you at your refinery of the different grades of oil, the Mexican crude, the Mid-Continent crude and the Pennsylvania crude?"

Mr. Benson: "I produce a table, correctly compiled from our records, showing these facts."

Allocation of refinery cost of products—refinery operations for 11 months ended November 30, 1922

(Based on Federal Trade Commission method of cost finding in pamphlet issued April 7, 1921)

Products—	Average yield per barrel of crude run: Per cent of yield	Average yield per barrel of crude run: Gallons	Average f. o. b. refinery realization per gallon	Refinery realization per barrel of crude oil	Percentage of realization	Total cost of quantity secured from barrel of crude	Cost per gallon
Gasoline	24.45	10.27	$0.186155	$1.9118	54.61	$1.8668	$0.1818
Kerosene	8.60	3.61	.065875	.2378	6.79	.2321	.0643
Gas and fuel oil	55.00	23.10	.031543	.7286	20.81	.7114	.0308
Lubricating oils	6.57	2.76	.185387	.5117	14.62	.4998	.1811
Wax	.85	.36	.191309	.0689	1.97	.9673	.1869
Miscellaneous	1.00	.42	.100813	.0423	1.20	.0411	.0979
Total products	96.47	40.52	.....	*3.5011	100.00	†3.4185	‡ .0844
Loss	3.53	1.48	.....	.....	.....	.....	.....
	100.00	42.00	.....	.....	.....	.....	.....

Cost of crude run and average cost per barrel at Bayonne, N. J., 1922

Mr. Benson was also asked: "Have you worked out a table allocating refinery costs of products for the 11 months ending November 30, 1922, based on Federal Trade Commission methods of cost pamphlet issued April 7, 1921?"

To which Mr. Benson replied: "Yes, sir; and I submit it herewith."

Summary

	Average realization per gallon	Refinery cost per gallon	Profit per gallon
Gasoline	$0.186155	$0.1818	$0.004355
Kerosene	.065875	.0643	.001575
Gas and fuel oil	.031543	.0308	.000743
Lubricating oils	.185837	.1811	.004287
Wax	.191309	.1869	.004409
Miscellaneous products	.100813	.0979	.002913

*Sold per barrel. †Cost per barrel. ‡Profit per barrel.

	Crude run	Cost	Cost per barrel
Pennsylvania	1,329,727.95	5,547,052.40	4.1715
Mixed	2,733,308.12	8,291,061.12	3.0333
Mexican	3,900,615.27	6,844,674.63	1.7547
Panuco	32.56	81.63	2.5071
Mexia	160.92	591.85	3.6779
Total	7,963,874.82	20,683,464.63	2.5972

Based on Federal Trade Commission method of cost finding in pamphlet issued Apr. 7, 1921

READING
GUARANTEED GENUINE
WROUGHT IRON PIPE

To Emphasize some further reasons for "Reading" Superiority

Oil operators throughout the country daily demonstrate the proof of the adage—"The best is the cheapest." They prove it in the work of their drill crews; the erection of their rigs; the results from the tubing they use. Some of them prove it on the profit side of their ledgers—others on the reverse.

The man who uses Reading Genuine Wrought Iron Tubing knows the true economy of the pipe that endures. He can tell what Reading means in avoiding production losses and idle labor. But there are some oil operators who still compare *tubing prices* instead of *tubing values*, and it is for these men the pages inside have been written.

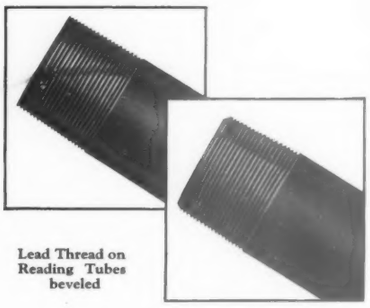
READING IRON COMPANY

Reading, Pa.

World's Largest Makers of Genuine Wrought Iron Pipe

Oil Well Supply Co. Distributors
Stores in All Important Oil Fields

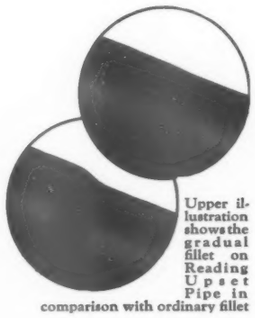
THE remarkable ability of Reading Genuine Wrought Iron Tubing to resist corrosion and crystallization is a fact thoroughly accepted throughout the oil fields. In addition to these inherent qualities of genuine wrought iron, Reading Iron Company's persistent efforts toward improvement offer the user of tubing other specific points of superiority, which insure greater economy of operation and minimize the danger of production losses.



Lead Thread on Reading Tubes beveled

Wrought Iron is recognized as possessing superior welding qualities, but as an added precaution against defects all Reading Oil Country Tubing is doubly welded. The operator is absolutely sure that no weak spot exists in any length of Reading Tubing.

In beveling off the lead thread, we have eliminated the danger of the lead thread being broken off and ground into the threads of the coupling, which frequently causes the threads of the entire joint to be stripped. In like manner the entering thread of Reading Couplings is beveled off. The result makes it practically impossible to cross threads, and insures quicker and easier stabbing.



Upper illustration shows the gradual fillet on Reading Upset Pipe in comparison with ordinary fillet

When we gave Reading upset pipe a gradual fillet to prevent concentration of strain at the base we removed the obstacle which has always kept upset pipe from being 100 per cent efficient.

READING

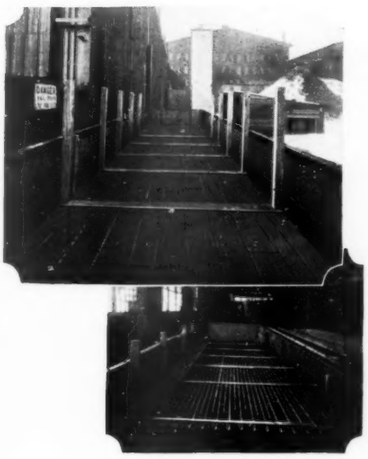
GUARANTEED GENUINE

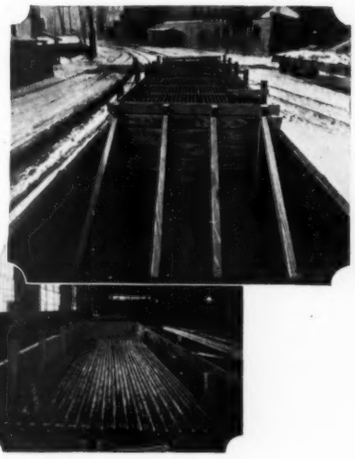
WROUGHT IRON PIPE

Conclusive tests have proven that Reading joints may be made up and broken out at least seventeen times without injury to the threads on either pipe or coupling—an interesting fact for any man who ever had a two-day shutdown and a twenty-mile haul to thread a string of tubing after the first or second "pull-out." This unusual virtue is due, not only to rigid mill practice, but also the inherent qualities of genuine wrought iron, which permits excessive friction without galling.

Rigid, painstaking inspections at every phase of the making safeguard all Reading Tubing against the slightest imperfection. After the rolling test, which proves the straightness of the tubing, comes the passing of a 42-inch drift—⅛ inch smaller than inside diameter of tube, to guarantee free passage of pump plungers.

Lastly, the packing methods, which make sure that every length will be as straight, and in as good condition when you receive it, as when it left our plant. First, the bottom of the car is made absolutely level. Strong straight side supports are put in place. Each layer of tubing is separated from the others by strips of wood running from side to side of the car. Each layer is thoroughly sprayed with a crude oil solution before the next is added. Then, finally, the entire shipment is boxed in the car in such a way that the tubes are immovable in transit, no matter how long or hard the trip.





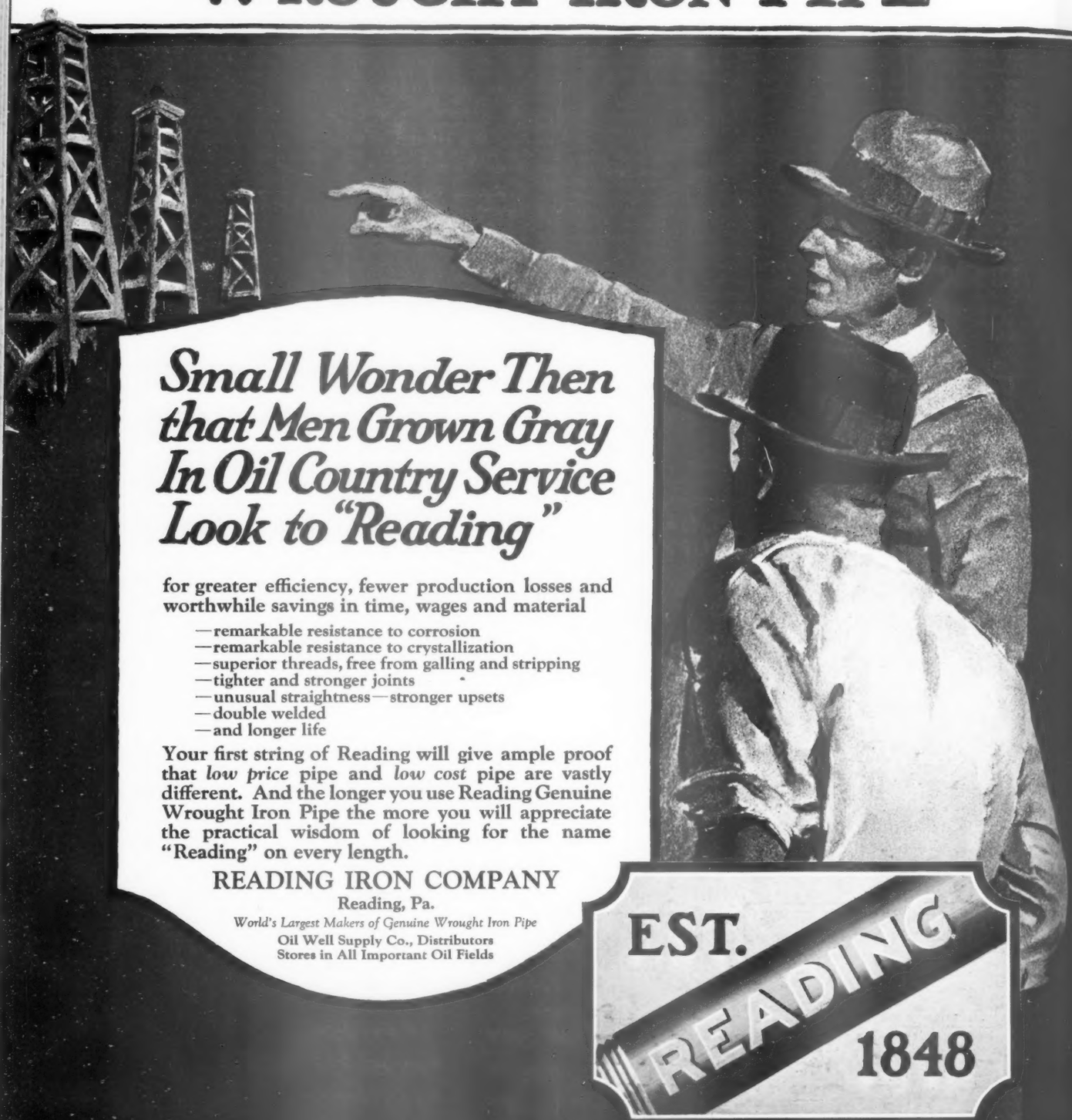
READING

GUARANTEED GENUINE

WROUGHT IRON PIPE

READING

GUARANTEED GENUINE WROUGHT IRON PIPE



Small Wonder Then that Men Grown Gray In Oil Country Service Look to "Reading"

for greater efficiency, fewer production losses and worthwhile savings in time, wages and material

—remarkable resistance to corrosion
—remarkable resistance to crystallization
—superior threads, free from galling and stripping
—tighter and stronger joints
—unusual straightness—stronger upsets
—double welded
—and longer life

Your first string of Reading will give ample proof that *low price* pipe and *low cost* pipe are vastly different. And the longer you use Reading Genuine Wrought Iron Pipe the more you will appreciate the practical wisdom of looking for the name "Reading" on every length.

READING IRON COMPANY
Reading, Pa.
World's Largest Makers of Genuine Wrought Iron Pipe
Oil Well Supply Co., Distributors
Stores in All Important Oil Fields

EST. READING 1848

Why Investors Risk Their Money in Oil

Reward Must Be Commensurate With Extraordinary Risks to Attract Capital Needed to Finance Industry's Search for Supply

By L. M. Fanning

The petroleum industry must attract capital. In this respect it is no different from any other industry. However, in two important respects directly relating to investment the oil industry does differ from the average business. These are the tremendous growth—the necessity of growth—and the natural hazards.

Possibly no other industry has the burden of financing which is placed on the oil business in consequence of the multiplying of essential demand for products. The only reason why the hundreds of millions of dollars of capital have been forthcoming to finance necessary expansion is that the people who had the money thought they could make a profit.

It is generally recognized that the oil business is one of the most hazardous and uncertain of American industries. This being fundamental in that it relates to the idiosyncrasies of finding oil and to the whims of well production—in other words, to the industry's raw material—it would follow that to attract necessary capital the industry would be forced to offer high returns in the way of dividends to stockholders.

This alone would seem a justification for high rates of earnings, assuming that operations were sufficiently successful over a period of a year to make it possible to show any profit at all, for, granted the hazard and uncertainty, there are bound to be lean years.

When the hazards of the search for oil and of production when found are considered, the annual losses incurred, even in the most conservative operation, constitute a material reduction in the working capital of the industry. This means that not only must sufficient new investment be found to keep the production of oil abreast of the steady growth of consumption but to replace that thus irretrievably lost.

Reward Must Reflect Risk

Persons who invest their money in an enterprise so precarious naturally expect, as a reward for the risk they take, to gain more return than their fellows who insist upon an "absolutely safe" investment. The investor who takes no risks can not hope to win the larger reward which alone attracts the other man to hazard his money on a chance of success. The cautious man who "plays safe" has no reason to be jealous of his more adventurous brother's getting a larger return, if he gets any at all. The man who takes the risk has earned it.

Looking at it in that way which is the only sensible way to look at it, it is evident that, if the oil industry is to continue to attract the capital needed to maintain the nation's supply of oil, anything that will tend to interfere with the hope of reward which leads men to take those risks will be a public misfortune. If men are to be limited in the return for their investment in oil operations, with all the hazards that go with it, to merely the same returns as the man who buys Government bonds or other stable securities, why should any one choose the risk when he can get as much without taking it?

Any form of regulation or restriction that will have that effect will check the flow of new money into the oil business and correspondingly lessen operations and the chance of finding new production. Any decline in production, in turn, must mean an advance in prices. If the public understood the immediate relationship between the enterprise of investors whose money is needed to finance the growth of the industry and the supply and prices of petroleum products, there would be less misjudging of the oil business in and out of Congress.

To Think of on Profits

Any consideration of profits in the oil industry must bear these facts in mind.

Are oil company profits big? And if they are big are they excessive?

The character of operations of all oil companies is not identical. There are thousands of small companies which do nothing but produce oil. There are probably as many as a couple of hundred companies which do nothing but refine oil. It is estimated that only 40 per cent of the oil produced is refined by the companies or individuals which produced it.

Then there are companies which engage in both production and refining. Of the latter it is safe to say that while they are many in number, those which actually produce enough to supply their own refinery requirements can be counted on the fingers of one hand. It is evident that due to the operating differences, if for no other reason, probably no two companies are subject to identical conditions as to cost.

The sub-committee of the senate committee on manufactures investigating gasoline prices in 1922, issued a table based on unchecked returns of 88 oil companies in which it showed the following per cent of net income on stock, borrowed money, surplus and reserves (except depreciation and depletion, allowing where necessary for good will and appreciation) for independent and Standard companies:

	Indep.	Stand.	Comb.
1920	14.0	22.2	18.2
1921	3.2	6.8	5.1
1922 (first half)	8.6	11.9	10.4

A compilation made by the American Petroleum Institute covering a large group of so-called independents and Standard companies gives the per cent of net profit to net worth (capital stock and surplus, appropriated and unappropriated) as follows:

	Indep.	Stand.	Comb.
1920	11.3	17.5	14.7
1921	2.5	5.7	4.3

At a glance these figures bring out the fluctuations to which the industry is subject. In 1920 the net earning rates as computed were substantial. In 1921 they suffered a terrific decrease. If 1920 earnings are regarded as high, 1921 earnings can only be regarded as low and from the investment standpoint entirely inadequate. Average earnings for the two years, 1920 and 1921, as shown in the first tabulation are 11.6 per cent, and in the second tabulation, 9.5 per cent.

Earnings Not Excessive

A compilation of reports covering 13 of the largest and most successful companies selected by the senate sub-committee with a view to proving the contention of undue profits, revealed earnings on net assets for 1920, 1921 and six months of 1922 at the rate of 12.1 per cent per annum.

An average earning rate of 12 per cent per annum by companies long in existence and progressive in policy cannot be held as excessive especially in view of the hazards of the business. It is admitted that these earnings are not representative, that many smaller companies made very small profits; some none at all, and a good many were forced out of business altogether.

Such compilations as shown above include necessarily only going companies at the time the tabulations are made. The companies which have gone by the boards and which, if possible of consideration, would have a profound bearing on the relation of profit to invested capital are unrecorded.

Any analysis of such failures must reckon with the natural hazards of the business and not merely with the contrast of failure to successful companies. That the latter have gained their success at the expense of the balance of the industry is not borne out. The growth of the industry has permitted the organization and successful operation of hundreds of new companies. Competition, on the other hand, has increased correspondingly, and added to the natural hazards is that economic factor.

The Standard Oil Co. (New Jersey) shows that during the period covering 1920, 1921 and the first six months of 1922, its net earnings were equivalent to 9.6 per cent per annum upon its net assets. These earnings represent the entire return on a very large volume of capital invested in what has already been termed one of the most hazardous and uncertain of American industries. It is doubtful if there are many efficiently managed industries in the United States which have shown a more conservative return upon invested assets over a period of years.

Necessitated by Growth

Since the dissolution of the old Standard Oil Co. the shareholders of the New Jersey company had received in dividends, up to the end of the period covered, an average of 4.4 per cent per annum on the net assets of the company. The remainder of its earnings are in plant and working capital.

Up until about 1919 the Standard Oil companies supplied all new working capital out of earnings. These earnings went into new equipment, expansion, and did not figure in the capital account. The result was that the companies were notoriously undercapitalized. A change of policy was noted in 1919 and the change was undoubtedly dictated to large degree by the continued phenomenal growth of the industry which demanded capital outlay far in excess of what could be supplied out of earnings.

Moreover, the ability of other companies to finance new enterprise—and this applies not only to American oil companies but to strong foreign interests which raised money in America to finance American as well as foreign operations—forced the Standard Oil to revise its time-honored policy in the interest of self-preservation. These companies also found themselves in a precarious position in relation to taxation. They were the antithesis to industries plentifully watered, which had everything much their own way in the making out a tax return.

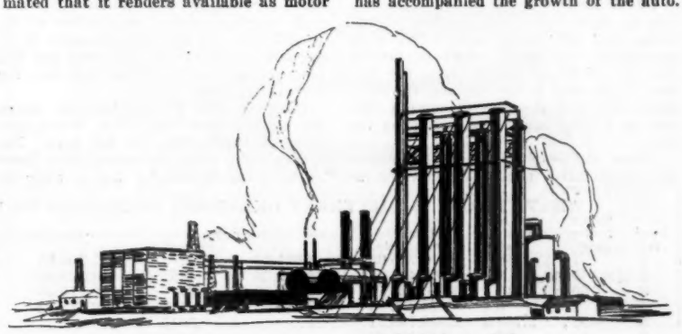
The public has been reading large figures—Standard Oil dividends—for a good many years. It has applied these figures to capital stock and has failed to realize that the big dividend yield resulting was not a true figure in that capital stock had remained stationary while assets grew. If from the outset the management had distributed each year a large part of its earnings as was customary with companies in other industries and had gone to the public with bond or stock issues to finance its expansion, this would have been accepted without question.

On the other hand, the Standard defends this policy and contends that the percentage of business mortality in the United States has been large because of the disinclination of many companies to be content with a slow but healthy growth financed from within.

NATURAL GASOLINE PLAYS BIG PART IN SUPPLYING MOTORISTS' DEMAND

The production of natural gasoline now plays an important part in the oil industry's effort to satisfy the motorist's appetite for gasoline. It is manufactured from natural gas or casinghead gas and its importance is but partially revealed by the production figures given, inasmuch as it is used to make marketable gasoline out of naphtha, not ordinarily of high enough grade. It is estimated that it renders available as motor fuel at least an equal quantity of naphtha which by itself is not a satisfactory motor fuel.

The natural gasoline manufacturing business is one of the industry's most important contributions to conservation. The first plant was built in 1904, but it was not until 1910 that the removal of gasoline from natural gas became commercialized. The growth of the industry has accompanied the growth of the auto.



NATURAL GASOLINE

	Production	Value
1911	7,425,839 gals	$ 531,704
1918	282,535,550 gals	$ 50,363,535
1922	505,832,000 gals	$ 72,711,063

HOW OIL IS MISSED OR FOUND ILLUSTRATED BY TRUE STORY

By N. O. Fanning

NEW YORK, March 17.—On a hot day in June, 1923, a group of geologists and petroleum engineers were traversing a sketch of wooded country in central Texas. Two thousand feet under them, without their being conscious of it, was a rich oil piol. This was exactly what they were searching for, but the surface indications at this particular spot were not as promising as at a point about half a mile farther on, which was their objective.

On the went until they had reached a little pool—sort of marshy country—and they stopped here and examined minutely the water and land surrounding it. They found what they were looking for—indications of oil, in the form of iridescent scum on the water and traces of seepages in the surrounding brush.

A month later, the geologists had reported back to their company, which had leased the tract under examination, and the result was that a road began to take form from the main highway to the "location." It was not a good road—rough and rutty—but it served to enable the company to move in the needed equipment for drilling, including lumber, machinery, pipe, engines and a boiler. As soon as a camp for the drilling crew had been established and the derrick built, the latter was "rigged up" and actual drilling commenced. Three months later, after numerous accidents, not unfamiliar to those drilling for oil in wildcat territory, a showing of oil was struck at a depth of about 2,000 feet. The driller was so encouraged by the "show" that he reported hastily back to his superiors that the well looked good for a thousand barrels of high-grade oil daily "and probably better."

Meanwhile, a certain promoter who had heard of the easy money to be made in the oil promotion game and had accordingly left the shirt business, had leased for a song a small tract of land about half a mile from the site of the well and had disposed of enough stock in his company to start the drilling of a well, and still have a generous supply left for his "personal" requirements.

The company which was drilling the original well was capitalized for $100,000, while the other was capitalized at $10,000,000. The former had $100 000 cash paid in for stock and had already spent $30 000 in the drilling of the well down to 2,000 feet. The latter had $35 000 paid in and had spent $15,000 in actual development.

When it became known that the original well had a "show" the promoter got busy at once and disposed of $531 000 additional stock. The holders of stock in the $100,000 concern, numbering 502 stockholders who had invested an average of 197.21 each, of which an average of 30 per cent, or $59.76, had been spent, received generous offerings for their holdings, but few would sell, in view of the attractive outlook.

However, a week later, the drill in the original well had gone 100 feet farther, the show of oil had disappeared and nothing further was struck. The well was drilled to a depth of 2,500 feet, and all hope abandoned. There was scarcely enough left in the company's treasury to start another well and as the price of oil was steadily dropping, new financing was made difficult.

The promoter who had financed the second well was generous enough with his funds to let a contract for completing his well to a depth of 2 000 feet, so that despite the failure of the original well, this test kept on going down. However, the promoter had "cleverly" unloaded enough stock to a group of townspeople in New York State at a low figure, but what he believed high in view of the failure of the first well, so that control of the company went over to this group, and the promoter pulled up stakes and "went west."

The second well, meanwhile, kept on going down. At 2,000 feet, a roar of gas filled the air, rushing from the mouth of the well, followed by a gush of oil over the top of the derrick.

The group of townspeople who now controlled the company sent a representative several thousand miles to Texas, who sold the well and the property to a large all-around oil company for three times the amount paid for their interest.

This company was a subsidiary of a big refining and marketing company whose marketing field was the Middle Atlantic States, and which marketed in the town the people had lived in from whom the property was purchased. A new and better road was built to the property, tanks built, a pipe line built, and ultimately the oil was run a distance of several hundred miles to a port on the Gulf Coast of Texas. Thence it was loaded into oil tankers and shipped to New York, where it was refined. The gasoline was put into tanks at the refinery and later shipped out in tank cars, some of it going into filling stations in the town about which we have spoken. This was six months after the well had been brought in.

One day the representative who had gone to Texas to sell the oil property drove up in his car to a filling station and filled his tank with "gas." He drove off, and these thoughts never occurred to him:

1. That the money he paid for the gasoline went toward paying him for the oil property in Texas which he had sold to the big oil concern, toward the construction of roads, tanks, pipe lines, the maintenance of port facilities, oil tankers, warehouses, tank cars, loading racks, refineries and service stations.

2. That the gasoline he was using came from the property in Texas which he had sold.

3. That the success of the well on this property was purely accidental.

4. That the promoter who had sold control of the company to the group of townspeople he represented had returned to the shirt business.

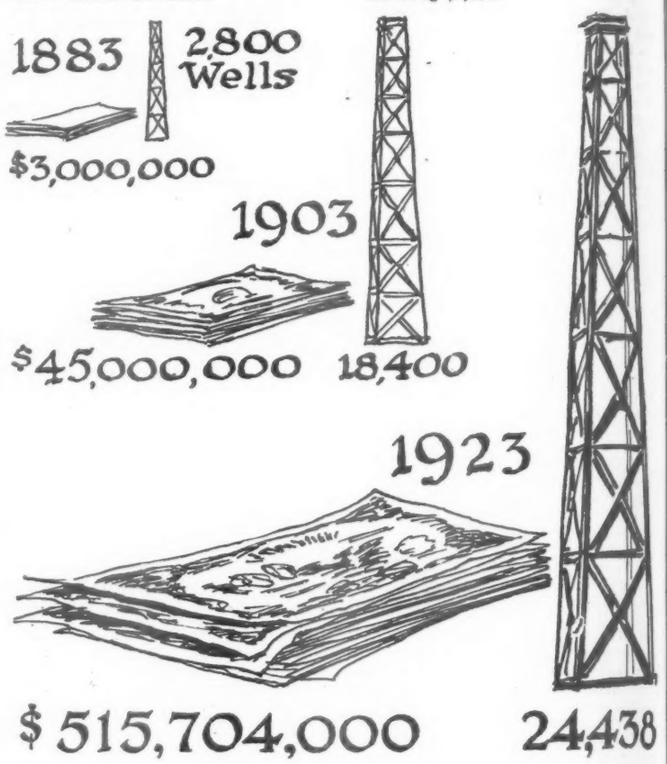
$515,704,000 IS EXPENDED ANNUALLY IN OIL WELL DRILLING OPERATIONS

In one year, 1923, the petroleum industry completed in the United States 24,438 wells at an estimated cost of $515,704,000.

Oil wells today are drilled to an average depth of about 3,000 feet. The ordinary well costs the oil operator conservatively $25,000 to drill. Six years ago drilling for oil as deep as 3 000 feet was a rarity and was considered an expensive and hazardous adventure.

Today the drill pipe and the bit are penetrating the earth 5,000 feet as a common occurrence. The cost of drilling these deep wells runs from $50,000 to $125,000 each.

Twenty years ago oil was struck at an average depth of 1,500 feet and the average cost of drilling a well was $2,500. Forty years ago a well could be drilled for a few hundred dollars, the cost rarely exceeding $1,000.



HOW THE COST OF PRODUCING CRUDE PETROLEUM VARIES

Three years ago 18 Oklahoma oil producers were induced to show what it had cost them to produce oil the year previously. Some of them were big companies, a few were small individual operators. Their total gross production ranged from 6,795.06 bbls. up to 5,398,465.17 bbls. for the year.

One of the operators had one lease containing 6 wells, while another of the group had 497 leases with 2,764 wells producing. All were, asked to furnish the cost of lifting the oil from the bottom of the well to the surface, the overhead costs and the general costs, to arrive at a total expense of producing the oil.

Rents and canceled leases, depletion and depreciation were asked for, but as these were not furnished by all the companies they will not be considered, although they added greatly to the total cost per bbl. as given in the accompanying table in the reports which contained the information.

The accompanying table will show the wide variation in the costs of producing a barrel of oil in even one State.

For example Company No. 1 has one lease, containing six producing wells, with a gross annual production of 6,795.06 bbls. It cost this operator $1.41 per bbl. to lift the oil, 53 cents per bbl. for overhead and 2 cents per bbl. for general expenses.

Company No. 2 also has one lease, but on it it had eight wells, which produced 60,494.05 bbls. for the year. No. 2 with eight wells had nearly nine times as much production as No. 1 with six wells. His lifting cost per bbl. was reduced to 47½ cents per bbl. as against $1.41 for Operator No. 1. His overhead per bbl. was also less or a fraction over 34 cents, as against 53 cents per bbl. for Operator No. 1. His general costs, while over nine times that of Operator No. 1 were a little less per bbl. or 1 4/5 cents as against 2 cents for Operator No. 1. Operator No. 1 with a small production had a total expense of $1.96 per bbl. for producing his oil, while No. 2 with a big production from only two more wells had an expense of 83 2/5 cents per bbl.

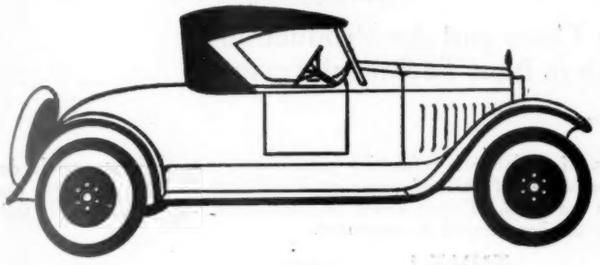
A study of the table will show the considerable variance in costs between that of one company and another, although some of them are operating in the same fields, and all of them in the one State.

WHAT IT COST 18 DIFFERENT OKLAHOMA OPERATORS TO PRODUCE OIL IN ONE YEAR

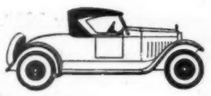
Prod. No.	No. of leases prod.	Av. No. of prod. wells	Gross prod., bbls.	Lifting Costs		Overhead Costs		General Costs		Tl. exp. per bbl.
					Per bbl.		Per bbl.		Per bbl.	$1.96
1	1	6	6,795.06	$ 3,601.30	$1.41	$ 1,290.85	$.53	$ 63.61	$ .02	.834
2	1	8	60,494.05	18,847.30	.475	13,539.83	.341	582.87	.018	1.9463
3	50	370	1,010,030.72	344,138.60	.617	158,119.58	.2318	748,536.41	1.0975	1.485
4	1	6.4	78,632.93	17,286.95	1.055	6,872.72	.42	34.89	.01	.8405
5	497	2,764.6	2,998,743.21	.....	.5045	.....	.1246	.....	.2114	.96
6	10	93	143 033.88	.....	.5678	.....	.1822	.....	.21	1.2712
7	5	68	37,082.18	.....	.7386	.....	.3216	.....	.211	.94
8	175	1,101	5,398 465.17	.....	.69	.....	.025	.....	.225	1.7027
9	181	1,823	2,816 459.29	.....	.726	.....	.286	.....	.6907	.3363
10	40	131	2,032 079 00	199,121.91	.1424	134,584.84	.0963	136,494.26	.0976	.978
11	89	396	2,049 652.13	727,540.26	.473	.....	.216	.....	.289	.789
12	29	187	377,429.68	186,285.91	.592	41,816 37	.133	20,021.84	.064	.441
13	5	25	201 902.71	62,458.28	.371	11,782.91	.07	10.00	.....	1.169
14	27	238	501,737.90	.....	.597	.....	.06	.....	.....	1.389
15	7	40	521,742.00	13,697.28	.72	5,707.20	.30	7,019.86	.369	.7305
16	7	4	299,799.00	106,647.01	.4065	52,851.50	.2015	34,437.17	.1313	1.16
17	6	219	296,750.00	153,937.24	.622	99,556.36	.403	35,011.18	.141	1.48
18	3	11	69,280.03	19,302.15	1.048	7,220.81	.394	109.61	.008	

DESPITE HANDICAPS OIL INDUSTRY MEETS FUEL DEMAND OF CAR GROWTH

1923—15,200,000 Cars



1913
1,280,000 Cars



Twelve times as many cars in use 1923

1923
726,000,000 Bbls.

1913
248,000,000 Bbls.

Three times as much crude oil produced

1923
7,555,945,143 Gals.

1913
1,260,000,000 Gals.

Six times as much gasoline manufactured

Despite the handicaps of an unknown and uncertain supply of raw material, crude oil, the production of which has increased but three times as much since 1913, while the number of motor vehicles has increased 12 times, the oil industry has managed to supply motor fuel to this tremendously enlarged number of consumers by manufacturing six times as much gasoline as in 1913.

Without the improved methods of drilling, the invention and perfection of drilling equipment, new processes for the greater extraction of refined products from the crude, and improvements in all the departments of producing, refining and marketing petroleum, the manufacture and use of motor vehicles would have been checked by lack of fuel.

AMERICA'S 640,000 WELLS

It is estimated that 640,000 wells have been drilled for oil in the United States since the beginning of the industry in 1859.

Gasoline Cheapest Thing About An Auto Shown Item by Item

It must be because the motorist buys gasoline oftener than anything else connected with his car that the price irks him so much. If he ever sat down and figured the relative cost of gasoline and the other charges for the operation of a car during a year he would be very much astonished to find that gasoline amounts to only about 15 per cent of what he spends for the pleasure and profit of owning and operating an automobile.

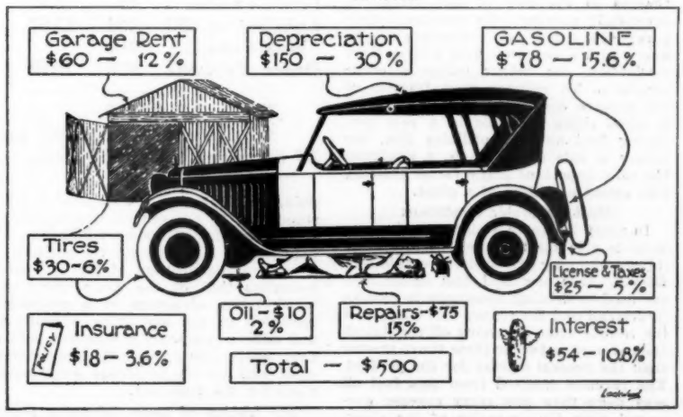
He invests on an average, it has been computed, $900 in a car which ordinarily should be for six years' service. Say that at the end of the six years he has nothing left of his investment but a piece of junk. That would mean ownership of the car had cost him $150 a year for depreciation. Allow him 6 per cent interest on the $900 he paid for the car and it will run to $54 a year. Say he had to buy a tire each year at $30. He paid $5 a month for a garage on an average, many paying $10 a month but many, in the country, running the car into a barn or letting it sit out. Allow $75 a year for repairs, which would be in six years, equal to one-third of the original cost. Put down at least $18 for insurance against fire and theft. License plate and taxes on the original purchase or on parts will run about $25 a year. Calculate a gallon of gasoline a day—or, at the very lowest, 10 miles driving—at 21 cents a gallon and it costs $78 a year. Figure a quart of oil, at 25 cents, to every 100 miles, a generous allowance, say it costs $10 for 5,000 miles in a year.

The annual cost will then appear as follows:

Depreciation	$150	30.0%
Interest	54	10.8
Tires	30	6.0
Garage	60	12.0
Repairs	75	15.0
Insurance	18	3.6
License and Taxes	25	5.0
Gasoline	78	15.6
Oil	10	2.0
Total	$500	100.0

Gasoline thus costs but 15.6 per cent of the total upkeep of a car 15½ cents out of every dollar spent.

But a great majority of car owners buy a car and forget all about allowing for depreciation for wear and tear, or for interest.



MILLIONS RISKED AT SALE OF OSAGE LEASES

Take the Osage sale, the auction by the Federal Government of leases to oil lands belonging to the Osage Indians, reported in this issue, as an example of the hazards risked by oil men in pursuit of new production.

When a man buys coal lands or iron ore lands, he has had the presence and almost exact quantity of the mineral beneath the surface surveyed and determined by engineers. He takes no chances whatever. He knows the coal or ore is there, ready to be taken out.

But the oil man who bids for these Government leases to seek oil on Indian lands has no assurance that he will find oil. Experience at previous sales has shown that leases which brought high prices were poor investments and, contrawise, some leases bought for smaller sums have been the most profitable.

Bids of more than $8,000,000 in a single day's sale, risked on the hazard of drilling a 2,900-foot hole in the ground, show the adventurous spirit that marks the oil men beyond any of his fellows. What other business has men willing to bid $1,950 000 on a small tract of land in the mere hope of finding what he seeks more than half a mile underground? Four of the successful bids at Tuesday's sale ran above $1,500 000 each.

And all this for the mere privilege of drilling to determine whether oil is really to be found. If it is found, the oil men start production with that handicap of millions paid out for the leases and still have to pay to the Osages for each barrel recovered before they can count a dollar their own.

No wonder the average man in any other business looks upon the oil industry as a "gamble." It does not look like good business to him. But it is all part of the "game" to the veteran oil man, the spice of his existence, and the spirit that keeps the 15,000,000 motor cars in America running.

PRODUCTS AND IMPORTS TREBLE IN TEN YEARS

The oil industry has met the tremendous demand for petroleum products by an annual increase in the production of crude oil over a considerable period of years. Few industries can show the productive gains that have been registered by the petroleum business, nor the ability to provide a necessary product in the volume demanded.

It is apparent from the figures that at no time has the price of oil effected an economic barrier to the providing of the army of consumers with the quantity of oil required.

Still many times the price of crude oil has been inadequate to pay for the cost of drilling. It is axiomatic in the oil industry that the oil man will "drill his head off" if there is any chance of finding oil. This is the lure and the fascination the pioneer instinct pervading the industry, to go out and find more and more oil.

1903 domestic production was 105,500,000 barrels and imports were negligible; in 1913 production and imports totaled 266,300,000 barrels, and in 1923, 808,000 000 barrels. Not only in domestic fields but in foreign fields has American initiative carried the drill and found the oil sources necessary to supply the tremendously increasing annual demand for petroleum.

Summary of Six Months' Production Costs of Twelve Companies Operating in the Osage Nation, Classified According to Size of Wells on the Lease

Class—	No. of Wells	Production Gross	Production Net	Gross Prod. per Day per Well	Lifting Cost	Overhead Costs	General Costs	Depreciation	Total	Cost per Bbl.
"A" (10 bbls. or less)	1,932	1,359,657	1,093 241	3.88	$556.152.39	$181,643 62	$212,458.24	$324.000.00	$1,274,254.25	$1.17
"B" (5 bbls. or less)	1,284	561,953	467,532	2.42	328,765.28	90,454.67	145,637.52	206.500.00	771,357.47	1.65
"C" (4 bbls. or less)	1,133	436,873	363,441	2.13	275,979.45	74,216.16	125,809.03	179,500.00	655,504.64	1.80
"D" (3 bbls. or less)	877	281,234	233,775	1.79	208,787.94	54,960.44	97,808.32	136,000.00	497,646.70	2.13
"E" (2 bbls. or less)	528	130,347	108,138	1.31	116,480.83	29,633.80	61,536.23	80,250.00	287,900.86	2.66

Cost of Refining a Barrel of Crude

Factors Entering Into Refinery Costs and the Production of a Gallon of Gasoline Set Forth in Non Technical Terms

By C. O. Willson

What does it cost to refine a barrel of crude?

What does it cost to produce a gallon of gasoline, kerosene, lubricating oil, fuel oil, gas oil or any one of the remaining products which can be secured from a barrel of raw material?

These are questions which in the public mind are as easy of solution as the determination of the cost of a bushel of potatoes, a barrel of flour, the admittance price to a movie, a ton of coal, or any one of several hundred commodities and entertainments which are widely utilized and enjoyed and which can be traced through their distinctive cost factors with comparative ease.

Those connected with the manufacturing end of the oil business know that it is a far more difficult problem. Some have unhesitatingly taken the position that manufacturing costs in the sense that they are determined in many other industries are not obtainable. With the packing industry they hold that they are so restricted in their operations by the quantity and quality of their raw material on the one hand and a constantly changing market for the products they manufacture on the other, that it is not possible at any time to arrive at cost figures which could be said to be representative for the industry over several months or a longer period.

In other words, a cost figure today, for reasons which will be made clearer later might be entirely erroneous and misleading three months in the future or even one week or a day.

Representative Refinery

In order to point out several situations in the manufacturing end of the oil business directly concerned with the position of the refiner in the public clamor for lower prices on the commodities he furnishes the writer has selected Oklahoma, a State generally conceded to be a representative refinery area, covering its operations during 1923.

Oklahoma was selected for several reasons. In the first place it is **the center and dominant refining area of the Mid-Continent Field**, consisting of the light crude producing areas of Oklahoma, Kansas, Arkansas, North Texas and North Louisiana, around which, in turn, center the open markets of the petroleum world. Its refined products during the period of a year will find their way to practically every consuming center in the entire world. It is often shut out of certain markets for brief or long periods due to competitive conditions, but it is always ready to enter again when conditions become favorable. In that sense it is the "watch dog" of the oil industry's markets and probably the most important price factor of the industry.

In the second place **it is the home of the so-called independent refining industry.** Not a barrel of the approximately 160,000 barrels which are being manufactured into petroleum products daily goes through a still of a Standard company or one of its subsidiary organizations. Major refining organizations have been built up through their operations in the State, however, and for that reason the State's refining interests, considered as a whole, have that permanent characteristic necessary to arrive at any fair conception of refinery costs and profits.

Further, due to the fact that it secures practically all of its crude supply within the State, it is easier to arrive at a more accurate figure covering cost of raw material and pipe line charges than many other refining areas. Finally, although its operations are largely confined to skimming—the oldest and simplest refining process known — it does have plants which manufacture a complete line of petroleum products, except the highly specialized lines the market for which is comparatively limited.

Extremes in Refining

In attempting to arrive at a cost for the refining of a barrel of crude **two extremes might be pointed out.** At the lower end would be the temporary skimming plant. This plant, whose smoke stack rises almost as soon as the second derrick after a new field is discovered, unquestionably for a brief period has the **lowest cost per barrel refinery charge. The original investment is small.** By buying second-hand or inferior material the builder for an initial outlay of $15,000 to $25 000 can build a plant which will skim off the lighter petroleum products from 1,000 to 2,000 barrels of crude oil daily.

Taking advantage of the fact that in a new field, pipe line facilities are inadequate, the refiner buys his crude at his own price with no regard to the price posted by the larger buyers who handle the bulk of the field's output. Pipe line charges in the case of this plant are practically nothing. By running a temporary line a few rods connecting the refinery with a new well with a large flush production, the refiner brings a crude supply to his refinery at a fraction of the average cost. Gas for refinery fuel is often times available in a new producing field and, by utilizing this, the refiner **is able to reduce to a minimum the most important single factor entering into actual operation of a plant.**

Most Favorable Conditions

In many instances a plant of this character is able for brief periods to market its output under **extremely favorable conditions.** In a new field, fuel oil for boilers used in drilling operations is usually in demand and the refiner may dispose of the residue after skimming off the lighter ends at a price **two or three times greater than the general market for the product. The revenue received from this fuel oil may more than pay every expense** connected with the operation of the plant, leaving the refiner free to obtain whatever he can for the remainder of his output. This latter is usually sold as gasoline and kerosene within a few miles of the plant to the jobber who operates in the oil field where the consumer is not in a position to be discriminating as to the quality of the gasoline or kerosene that he buys.

It requires no further comment to state that this refiner is not representative. He bears much the same relation to the refining industry that the carnival peanut stand does to the general merchandising of food stuffs. To stay within the oil industry for a comparison the position of a refinery organization of this character resembles that of the State warehouse which **takes advantage of a temporary condition** in the marketing of gasoline and sells in competition with the permanent service station with its large investment and all its numerous accommodations for the customer.

The history of these skimming plants indicates how fortunate it is for the consumer that he is not dependent on them as his source of supply. These plants as previously pointed out, manufacture only the more bulky refined products—gasoline, kerosene, distillates and fuel oil—with little assurance as to the quality of any commodity. But the most important characteristic of the operations of these plants is the **uncertainty of their operations. They may provide a feast while they operate but the famine is equally as certain due to fundamental conditions within the oil industry.**

Story of Burkburnett

These plants do not survive. There is plenty of proof of this contention. In 1918 the Burkburnett Field was discovered in North Texas. Part of this field was located within the city limits of Burkburnett and in the town lot development, the area within a few months reached a peak production for a short period of around 200,000 bbls. daily. This large crude production, which the major pipe line companies were unable to care for, resulted in the construction of a large number of refineries at Burkburnett and other points within a radius of a few miles.

This was less than five years ago. The production of the Burkburnett area, although it was later extended, **decreased** rapidly and today its daily production is approximately 20,000 barrels. **Fourteen of the 25 refineries which were built in that section as the direct outgrowth of**

Tables giving yields and expenses of Oklahoma refineries operating on Oklahoma crude during 1923. Figures giving percentage of recoveries of refined products based on Bureau of Mines reports covering Oklahoma-Kansas operations for 1923. Prices based on quotations carried in The Oil and Gas Journal. Nothing included for return on investment in expenses.

TABLE 1

Based on average posted price of Oklahoma, and Kansas crudes for 1923.

	Per Cent	Yield Gallons	Price Per Gallon	Yield Per Barrel		Expenses	Loss
Gasoline	41.4	17.18	9.78c	$ 1.68	Crude	$1.57	
Kerosene	9.2	3.86	4.24	.1636	Pipe Line	.25	
Fuel and Gas Oils	41.7	17.51	2.45	.43	*Other Costs	.65	
Lubricating Oils	2.7	1.134	13.67	.154			
		Coke $9 a ton					
Wax-Coke	.7	Pounds Wax 2.54c pound		.016			
Other Products	.4	.168	10.	.016			
Losses	3.9	1.638					
Totals	100.	42.		$2.459		$2.47	$ .011

*Includes plant operation, selling expense, general and administrative expense, taxes, tank car operations and deprecation. Does not include return on investment.

TABLE 2

Showing yield and expenses in refining barrel of Oklahoma crude oil during 1923 based on 15-cent premium over the average posted price of crude oil.

	*Yie'd	Expenses		Loss
Gasoline	$1.68	Crude	$1.57	
Kerosene	.1636	Premium	.15	
Fuel and Gas Oils	.43	Pipe Line	.25	
Lubricating Oils	.154	*Other Costs	.65	
Other Products	.016			
Wax-Coke	.016			
Totals	$2.459		$2.62	$ .161

*From Table 1

TABLE 3

Showing cost of producing gasoline, fuel oil, kerosene and other refined products based on Federal Trade Commission method of calculation. Yield and expenses based on Table 2.

	Yield Per Barrel	Yield Per Gallon	Expenses Per Barrel	Expenses Per Gallon	Loss Per Barrel	Loss Per Gallon
Gasoline	$1.68	9.78c	$1.789	10.41c	10.9c	.063c
Kerosene	.1636	4.24c	.174	4.5	1.04	.026
Fuel-Gas Oil	.43	2.46c	.456	2.59	2.6	.013
Lubricating Oil	.154	13.67	.165	14.4	1.1	.073
*Wax-Coke	.016		.018		.2	
Other Products	.016	10.00	.017	10.1	.16	.01
Totals	$2.459		$2.62		16.00c	

*Wax yield 2.54 cents per pound and coke $9 a ton. Wax expense 2.7 cents and coke $9.58 a ton.

the bringing in of one of the industry's greatest light oil fields were shut down on March 1 of this year. Only two or three of this number were ever consistently operated and all but five have been shut down over a year.

Eleven plants survived and of this number several have been able to build up strong organizations and no doubt are permanent additions to the refining industry. It is apparent that if they had been compelled to rely on the Burkburnett Field for their crude supply not more than two or three would have survived. Fortunately new fields have been opened in that section and this has enabled the stronger and more efficient concerns to continue operating.

Shut Down in Mid-Continent

Burkburnett is not an isolated case. The same report of March 1 previously quoted shows that in the Mid-Continent Field out of 264 refineries all but 131 are shut down. **Every new field with a large flush production has these tombstones which indicate the passing of new field development as surely as does the taking away of the drilling rig.** Up to date data for the entire United States are not available. However, the latest report of the Bureau of Mines covering all States at the end of 1921 showed that out of 479 plants 154 were shut down.

The inference is not made that all plants which are shut down belong to the class just described. Certainly very few of them belong to the $15,000 to $35,000 class, as a majority of them represent an investment from $250,000 to $2,000,000, although operating methods differ little from the smaller plants. As in other industries, refining organizations have failed, due to reasons which have nothing to do with the efficiency of plant operation or the availability of raw material. These failures are pointed out here simply to emphasize the fact that in arriving at an estimate covering refinery costs it is necessary to **gauge the future of a plant as well as the present.** These failures, in many instances, made large profits for short periods, but in a majority of cases never paid dividends, and in the sale or dismantling after a permanent shutdown, returned to the stockholders only a fraction of the original investment.

At the Other Extreme

This is the picture of the plants which for brief periods show the minimum operating costs. The other extreme is the plant located several hundred miles or more from a producing field without pipe line connections to transport the raw material to the plant. This organization, like the one which has its plant in the center of the producing field, ordinarily has no permanent crude supply. Unless it has storage in the field it usually buys storage oil from producers and pays a high premium over the posted price. It pays a gathering and pipe line transportation charge from the lease to the point of loading in tank cars equal to that charged the refinery located near the field. The crude is then moved in tank cars—the most expensive method of transportation—to the plant. It requires no further explanation to state that **this concern has costs which exceed the average.** If it survives it is due to an exceptionally favorable market at the point of plant location. These plants are few in number and it is obvious that **in this case also it is fortunate for the consumer of gasoline and other products that general market conditions are not based on its costs.**

Between these two extremes lies the refining industry. This fact conceded, the seeker of information as to what it costs to refine a barrel of crude oil or what it costs per gallon to produce gasoline, kerosene and other products has still quite a distance to go.

What Industry Is Not

In pointing out the extreme cases as **showing what the industry "is not,"** the writer hopes that some of the necessary characteristics of a successful concern have been indicated. In the first place it is apparent that **it must be permanent.** This permanency is the same as that of the flour mill, the packing house, the

OKLAHOMA-KANSAS

Product—	Pct. of Each Prod.	Gals. of Each Prod.	Price Per. Gal.	Value of Each Prod. Bbl.	Cost Based on Posted Price Crude		Profit	Loss	Cost Based on 15-Cent Premium		Profit	Loss
January, 1923												
Gasoline	41.7	17.4	$0.1185	$1.9635	Crude	$1.52	...	...	Crude	$1.67	...	...
Kerosene	9.48	3.98	.0472	.1879	Pipe line	.25	...	...	Pipe line	.25	...	...
Gas-fuel oil	42.04	17.65	.0272	.4701	Operations, etc.	.65	...	...	Operations, etc.	.65	...	...
Lubricating oil	2.5	1.05	.135	.1417			...	...			...	...
Wax and coke	1.7	.714	*	.095			...	...			...	...
Other products	.19	.0798	.10	.0079			...	...			...	...
Loss	2.2	.924					...	...			...	...
	99.71	41.82		$2.78	Total	$2.42	$0.36	...	Total	$2.57	$0.21	...
*Wax 2.4 cents per lb.; coke $9 per ton.												
February, 1923												
Gasoline	41.4	17.38	$0.14	$2.4343	Crude	$1.91	...	...	Crude	$2.06	...	...
Kerosene	9.05	3.80	.0459	.1744	Pipe line	.25	...	...	Pipe line	.25	...	...
Gas-fuel oil	42.1	17.6821	.0286	.5055	Operations, etc.	.65	...	...	Operations, etc.	.65	...	...
Lubricating oil	2.44	1.0248	.135	.1383			...	...			...	...
Other products	.17	.0714	.10	.0070			...	...			...	...
Wax and coke	.031	.0086	*	.009			...	...			...	...
Loss	4.6	1.93					...	...			...	...
	99.79	41.9078		$3.2685	Total	$2.81	$0.458	...	Total	$2.96	$0.308	...
*Wax 2.4 censt per lb.; coke $9 per ton.												
March, 1923												
Gasoline	40.9	17.178	$0.1375	$2.3619	Crude	$2.00	...	...	Crude	$2.15	...	...
Kersoene	8.8	3.696	.045	.1663	Pipe line	.25	...	...	Pipe line	.25	...	...
Gas-fuel oil	42.3	17.766	.0289	.5134	Operations, etc.	.65	...	...	Operations, etc.	.65	...	...
Lubricating oil	2.8	1,176	.135	.1587			...	...			...	...
Other products	.09	.0378	.10	.0038			...	...			...	...
Wax and coke	1.9	.798	*	.0114			...	...			...	...
Loss	3.2	1.344					...	...			...	...
	99.9	41.995		$3.2155	Total	$2.90	$0.315	...	Total	$3.05	$0.165	...
*Wax 2.53 cents per lb.; coke $9 per ton.												
April, 1923												
Gasoline	42.3	17.766	$0.1268	$2.2527	Crude	$1.97	...	...	Crude	$2.12	...	...
Kerosene	8.3	3.486	.0419	.146	Pipe line	.25	...	...	Pipe line	.25	...	...
Gas-fuel oil	41.17	17.291	.0292	.5048	Operations, etc.	.65	...	...	Operations, etc.	.65	...	...
Lubricating oil	2.43	1.02	.135	.1377			...	...			...	...
Other products	.04	.017	.10	.0017			...	...			...	...
Wax-coke	1.9	.798	*	.013			...	...			...	...
Loss	3.59	1.507					...	...			...	...
	99.73	41.895		$3.0559	Total	$2.87	$0.185	...	Total	$3.02	$0.035	...
*Wax 2.62 cents per lb.; coke $9 per ton.												
May, 1923												
Gasoline	41.1	17.262	$0.1068	$1.842	Crude	$1.65	...	...	Crude	$1.80	...	...
Kerosene	8.1	3.402	.04	.136	Pipe line	.25	...	...	Pipe line	.25	...	...
Gas-fuel oil	40.1	16.842	.0271	.456	Operations, etc.	.65	...	...	Operations, etc.	.65	...	...
Lubricating oil	3.07	1.289	.135	.174			...	...			...	...
Other products	.36	.151	.10	.015			...	...			...	...
Wax-coke	3.6	1.512	*	.01			...	...			...	...
Loss	3.58	1.503					...	...			...	...
	99.91	41.961		$2.623	Total	$2.55	$0.07	...	Total	$2.70	...	$0.08
*Wax 2.56 cents per lb.; coke $9 per ton.												
June, 1923												
Gasoline	42.7	17.934	$0.1136	$2.037	Crude	$1.60	...	...	Crude	$1.75	...	* ...
Kerosene	7.7	3.334	.04	.133	Pipe line	.25	...	...	Pipe line	.25	...	...
Gas-fuel oil	41.5	17.43	.025	.436	Operations, etc.	.65	...	...	Operations, etc.	.65	...	...
Lubricating oil	2.8	1.176	.135	.1587			...	...			...	...
Other products	.8	.336	.10	.0836			...	...			...	...
Coke-wax	.7	.294	*	.0103			...	...			...	...
Loss	3.5	1.47					...	...			...	...
	99.7	41.974		$2.8116	Total	$2.50	$0.31	...	Total	$2.65	$0.16	...
*Wax 2.37 cents per lb.; coke $9 per ton.												
July, 1923												
Gasoline	40.8	17.136	$0.0935	$1.6022	Crude	$1.60	...	...	Crude	$1.75	...	...
Kerosene	8.1	3.402	.0397	.135	Pipe line	.25	...	...	Pipe line	.25	...	...
Gas-fuel oil	40.81	17.14	.0226	.387	Operations, etc.	.65	...	...	Operations, etc.	.65	...	...
Lubricating oils	2.88	1.209	.135	.163			...	...			...	...
Wax-coke	.3	.126	*	.014			...	...			...	...
Other products	1.4	.588	.10	.056			...	...			...	...
Loss	5.4	2.268					...	...			...	...
	99.69	41.869		$2.3572	Total	$2.50	...	$0.143	Total	$2.65	...	$0.293
*Wax 2.37 cents per lb.; coke $9 per ton.												
August, 1923												
Gasoline	41.4	17.388	$0.0762	$1.325	Crude	$1.60	...	...	Crude	$1.75	...	...
Kerosene	8.9	3.738	.04	.1512	Pipe line	.25	...	...	Pipe line	.25	...	...
Gas-fuel oil	41.1	17.262	.0232	.4005	Operations, etc.	.65	...	...	Operations, etc.	.65	...	...
Lubricating oil	2.2	.924	.135	.1247			...	...			...	...
Other products	1.2	.504	.10	.05			...	...			...	...
Wax-coke	.36	.15	*	.013			...	...			...	...
Loss	4.6	1.932					...	...			...	...
	99.76	41.898		$2.0644	Total	$2.50	...	$0.436	Total	$2.65	...	$0.586
*Wax 2.49 cents per lb.; coke $9 per ton.												
September, 1923												
Gasoline	38.5	16.172	$0.0644	$1.074	Crude	$1.47	...	...	Crude	$1.62	...	...
Kerosene	10.1	4.242	.04	.1697	Pipe line	.25	...	...	Pipe line	.25	...	...
Gas-fuel oil	40.0	16.8	.0222	.373	Operations, etc.	.65	...	...	Operations, etc.	.65	...	...
Lubricating oil	2.5	1.05	.145	.152			...	...			...	...
Other products	.55	.231	.10	.023			...	...			...	...
Wax-coke	3.7	1.554	*	.029			...	...			...	...
Loss	4.5	1.89					...	...			...	...
	99.85	41.939		$1.8207	Total	$2.37	...	$0.55	Total	$2.52	...	$0.70
*Wax 2.87 cents per lb.; coke $9 per ton.												

					October, 1923							
Gasoline	39.3	16,506	$0.0644	$1.0629	Crude	$1.28	...	...	Crude	$1.43	...	...
Kerosene	10.3	4.326	.0403	.1743	Pipe line	.25	...	...	Pipe line	.25	...	...
Gas-fuel oil	40.9	17.178	.0215	.3693	Operations, etc..	.65	...	...	Operations, etc..	.65	...	...
Lubricating oils	3.1	1.301	.155	.2016			...	...			...	...
Oother products	.4	.168	.10	.0168			...	...			...	...
Wax-coke	1.4	.588	*	.026			...	...			...	...
Loss	4.4	1.848					...	...			...	...
	99.8	41.915		$1.851	Total	$2.18	...	$0.33	Total	$2.33	...	$0.48
					November, 1923							
Gasoline	39.4	16.448	$0.0624	$1.02635	Crude	$1.05	...	...	Crude	$1.20	...	...
Kerosene	11.3	4.746	.044	.2088	Pipe line	.25	...	...	Pipe line	.25	...	...
Gas-fuel oil	41.5	17.43	.019	.3312	Operations, etc..	.65	...	...	Operations, etc..	.65	...	...
Lubricating oil	2.8	1.176	.1396	.164			...	...			...	...
Other products	.16	.0676	.10	.0067			...	...			...	...
Wax-coke	.5	.210	*	.023			...	...			...	...
Loss	4.2	1.764					...	...			...	...
	99.86	41.8516		$1.7601	Total	$1.95	...	$0.19	Total	$2.10	...	$0.34
					December, 1923							
Gasoline	40.7	17.094	$0.07	$1.1965	Crude	$ .98	...	...	Crude	$1.13	...	...
Kerosene	10.9	4.578	.0459	2.10	Pipe line	.25	...	...	Pipe line	.25	...	...
Gas-fuel oil	40.9	17.178	.0208	.357	Operations, etc..	.65	...	...	Operations, etc..	.65	...	...
Lubricating oil	2.3	.966	.135	.13			...	...			...	...
Other products	.3	.126	.10	.0126			...	...			...	...
Wax-coke	.5	.210	*	.0247			...	...			...	...
Loss	4.1	1.722					...	...			...	...
	99.7	41.874		$1.9314	Total	$1.88	$0.05	...	Total	$2.03	...	$0.10

*Wax 2.78 cents per lb.; coke $9 per ton.

*Wax 2.75 cents per lb.; coke $9 per ton.

*Wax 2.76 cents per lb.; coke 9 per ton.

automobile and clothing manufacturing establishments and the manufacturing end of all other major industries charged with the responsibility at all times of furnishing a permanent supply of a given commodity.

Elsewhere in this issue the hazards of the producing end of the oil industry are pointed out. In a very direct way the **manufacturer shares in these hazards. In a sense they exceed those of the producer.** The latter may profitably operate a well after its flush production has settled to a few barrels. The refinery which builds up an organization and plant to handle a specified amount of crude daily must have this amount available consistently to operate efficiently and profitably. Herein lies **the greatest problem of the refining industry and the most important single cost factor in the operation of the permanent plant.** The slump in production of the Burkburnett Field has been pointed out. The field is typical. It means that while at one time a refinery may be able to obtain an adequate crude supply from a new field or one lease of that field, a year later the situation will change and that crude will be available only under the **keenest competitive conditions.**

Payment of a Premium

This situation, outside of a comparatively few major crude purchasers, means the **payment of premiums over the posted prices for crude oil by a majority of the smaller refinery organizations. The company must have the financial strength to enter into long time contracts with producers which they must carry out regardless of unfavorable developments either in the crude or refined markets. It means a constant search for new crude supplies involving any expenditure necessary to obtain the crude in competition with both large and small concerns.**

It would be possible to continue to trace these cost factors as they apply to all permanent refinery organizations. Back of an efficient organization are the officials and employes who operate it. These men are highly trained and skilled, and increasingly so, due to the demand for maximum efficiency. The employes, unlike the fly-by-night concern, must be assured of **permanent employment.** Often times permanent homes must be provided by the refiner. An organization must be built up and maintained regardless of the profitable operation of the plant. Due to conditions similar to those which prevailed over the greater part of 1923, plants sometimes **find it possible to operate only part capacity. Unlike the manufacturing ends of other industries expense cannot be reduced in line with the reduction in operations.** Little reduction in administrative and sales expenses is possible and it is apparent that **taxes, tank car expenses and depreciation continue as when the plant is operating** capacity. Many large manufacturing establishments can recruit employes from other similar industries after a shutdown or curtailment of operations. **This is not true of the refinery which has no closely allied industries. A large part of its operations does not resemble that of any other industry. These specialized operations require men of long training and a majority of larger refineries have found it expedient to keep these men on their payrolls at all times.**

Sale of Refined Products

Passing to the sale of refined products "permanency" is again the key word. It is agreed that the **consumers must be served at all times. It is equally apparent that the refinery which only operates when market conditions are favorable does not satisfy this requirement.** The permanent refinery organization is built up on satisfied customers. **Long-time contracts are often necessary to dispose of the plant output to customers located long distances from the refinery. As in the crude contracts the best interest of the company concerned requires that these contracts be fulfilled regardless of market fluctuations.**

With the fact in mind that the refining industry is charged with the direct responsibility of furnishing gasoline and other refined products for consumers, regardless of the cost at all points and at all times, it is now possible to pass to the actual consideration of costs as they are given in the accompanying tables covering Oklahoma refinery operations.

The point is emphasized that the tables are meant **to illustrate average conditions. The percentages of recoveries are based on the Bureau of Mines reports covering Oklahoma-Kansas refinery operations.** It follows that these percentages could not possibly cover the operations of any one plant. These reports include the operations of plants with skimming units, others with skimming and cracking units, and finally a comparatively few plants whose operations are complete, including the manufacture of lubricating oils and other heavier products.

Based on Averages

The expenses are also based on averages. The crude price given in the first table is based on the posted schedules of the major companies. The 15-cent average premium was based on an exhaustive survey of Oklahoma refinery operations. A few plants were able to buy crude over 1923 with a premium. Others, taking advantage of the proration period of the summer and fall months, were able to buy crude during this period under the posted price but paid premiums during the remainder of the year. These premiums varied from a few cents to 75 cents a barrel with 25 and 35 cents not uncommon. Due to the proration period when the large buyers were not able to take all the crude offered them, the average premium for the year in Oklahoma was under the average of previous years.

When confronted with the average price of 65 cents a barrel, covering refinery costs in Oklahoma during 1923, **the operator of the skimming plant will probably say that it is too high and the owner of the complete plant will say that it is too low. Both are right as far as their own operations are concerned.** Costs vary greatly among all plants, but probably no skimming plant's costs totaled 65 cents a barrel unless it was shut down the greater part of the year. At the same time the writer knows of no complete plant in Oklahoma whose total costs do not exceed 65 cents.

What Cost Covers

It should be borne in mind that this 65-cent figure **covers every expense, except return on investment, from the time the crude is delivered at the plant until the finished product is delivered to the jobber minus the freight charge from the plant to the bulk station.** Refiners themselves, are wont to consider only the actual plant operating costs when asked what it "costs to refine a barrel of crude." They overlook the general administrative expenses, the cost of selling after the products are refined, storage, taxes, insurance and large depreciation. They also are inclined to base their costs at a time when they are operating their plants at capacity and due to strong market are able to dispose of all their products with a minimum of sales expense. They forget the duller periods when plants are operating part capacity and **greater expenditures are necessary to dispose of the output in a market already flooded.**

The same law of averages applies to the yields. Skimming plants, except when operating with the highest gravity crudes. do not recover 40 per cent gasoline but with cracking units, plants exceed this recovery even when operating on crude secured from the low gravity fields. The same situation applies to kerosene, fuel oil and other products.

From this comparison of yields and expenses it is apparent that **while the skimming plant's operations cost less per barrel, its income is less. In other words, the whole scheme of the manufacturing end of the oil industry centers around the proposition "of spending more to get more."** Oklahoma operations cover all classes of "spenders" and "getters."

Problems in Products

This shows how unjust it would be to attempt arbitrarily to establish a representative cost per barrel for the refining of crude. Those with a superficial knowledge of the fundamental conditions within the oil industry have said "if the plants manufacturing complete lines of petroleum products are the most efficient, all refiners should enlarge their plants to operate along similar lines."

This contention has already been answered. The effect of **such a procedure as this at the present time would be to flood the market with the heavier products and at the same time create a famine in fuel oil, gasoline and kerosene and other light end products.** Plant operations in the past have always been based upon market conditions and location of crude supply and since both **are constantly changing, no arbitrary standard of plant operation can be established even within a comparatively small area.** There are still skimming plants which, due to advantages in markets and the availability of crude supply, can operate profitably. **This operation, to another plant of the same capacity, located in another section and faced with different market conditions would prove disastrous.** The permanent refiners change their operations as conditions require, as **in all other lines of manufacturing.** Cracking processes add to the output of the light end products, principally gasoline from a given amount of crude and, due to this fact, a large number of cracking installations are being made at refineries throughout the United States. Should the demand for lubricating oils and other heavier products largely increase, then more refinery organizations will be found adding to their plant equipment to supply it.

When Crude Increases

All these varying costs entering into the operation of several refineries can be illustrated in the operating cycle of one complete plant. At this plant all the costs entering into the refining of a barrel of crude oil and the production of a gallon of gasoline, kerosene and other products could be determined as of a certain date. The following day the crude price advances 25 cents. It does not follow that the expenses increased exactly 25 cents. **With the increase in crude price, the refiner might find that it necessitated a shift in his plant operation so as to change the amount of each product that he obtained from a barrel of crude. The higher crude might necessitate the starting up of the cracking stills so as to get a greater gasoline recovery.**

With his crude price unchanged, conditions in the refined market over which he has no control might change. A coal strike threatens or actually materializes resulting in an enlarged demand for fuel oil and higher prices. To meet this enlarged demand the refiner might find it profitable to change his operations so as to secure a greater recovery of fuel oil. This might add to his cost per barrel for the refining of the crude, while another refiner located at a distant point, operating on crude of a different grade and value might change his operations without adding to his cost per barrel. The demand for gasoline and many other products varies with the seasons and this also means a constant shift in the cost per barrel and the cost per product.

The only conclusion from this inherent situation in regard to refinery operations is that costs must be based on averages existing over long enough periods to eliminate the inevitable fluctuations in both the crude and refined markets. This has been done in the accompanying tables.

Evidence in Tables

The tables givng the yield and expenses based on monthly operations are especially interesting as indicating the direct effect of changes in the refined and crude markets. These tables are based on the assumption that all crude run to stills is disposed of during the month. This, of course, does not actually materialize, especially in the case of gasoline. Refiners are accustomed to store a part of their gasoline output during the winter season and this storage factor enters in the profitable sale of other products. The prices used are based on the tables given on pages 98 and 99.

The table does, to a remarkable degree, reflect actual conditions in Oklahoma during 1923 as they are known to have existed by refiners in daily touch with developments. It shows that, despite the higher crude prices in February, the refiners' margin of profit was greater than in January. However, by March the influence of the California overproduction situation became apparent. **Conditions**

(Continued on Page 96)

The Most Successful Solution to the Sand Problem Yet Discovered

Has 4 to 5 Times the Usual Sand Capacity; Saves 50% to 90% in Pulling Costs; More than 3000 in Use

A sure and absolutely guaranteed way of reducing your operating costs by saving pulling expense is offered by the working barrel shown on this page. Users report a saving in pulling costs alone of 50% to 90%, besides receiving other advantages. The

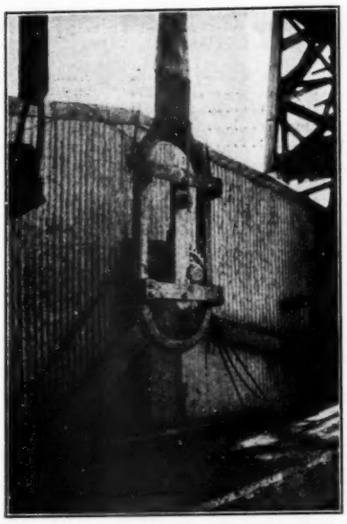
HANCOCK
Anti-Sand Working Barrel

though now in new hands, is not a new article. It has been proving its claims for years, in the work of some of the biggest producers in the business. As early as 1921 the Gypsy Oil Co. reported that a well that had required pulling **four to five times a week** required pulling only **eight times in nine months** after the Hancock Barrel was placed on the job. Similar instances are every-day occurrences.

Construction Simple. In construction the Hancock Anti-Sand Working Barrel is very simple. It is as easy to install as a common steel barrel. Steel construction with cast plunger insures long life.

Efficiency Due to Design.

The remarkable performance records of the Hancock Anti-Sand Working Barrel are due to its design. It has **four to five times** the sand capacity of other barrels positively will not sand up, and handles as much fluid as standard equipment.



The H. M. A. Pumper gives a 10-ft. stroke without rebuilding rig. Increases capacity. Eliminates rod expense. Works with Hancock Working Barrel.

More Than 3000 in Use. You are protected in buying Hancock Barrels by the fact that considerably more than 3000 of them are in use. Among the users are such companies as Empire, Waite Phillips, Producers & Refiners, Texas and Gypsy.

The Hancock is the only Anti-Sand barrel which is now offered in a size permitting a 10-foot pumping stroke. Long-stroke pumping is rapidly gaining favor. We also handle the H. M. A. Long Stroke pumper which makes possible the instant conversion of the ordinary pumping rig to 10-foot pumping stroke.

Returnable at Our Expense.

You may try the Hancock Anti-Sand Working Barrel in your own work without taking any chance whatever. If it doesn't meet our claims in every way, return it at our expense. Can anything be fairer? Write or wire for further details.

FOSTER-HOEFER CORPORATION
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Foster-Hoefer Corporation believes that if a man needs a thing he pays for it whether he buys it or not. Every well with flowing sand needs a Hancock Anti-Sand Working Barrel.

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Low Average Production of Oil Wells

Eighty-Two Per Cent Average Less Than 1 Barrel a Day. Production Famine Threatens With No Big Fields in Sight

By James McIntyre

The average man who has never visited an old field may carry a mental picture of an oil country as a place in which the air is filled with a translucent spray of "liquid gold" gushing from the earth on every hand.

To that average man let us say that there are 286,569 oil wells in the United States at this time, and if there are six wells out of the whole lot that are gushing over the derrick top at the time this is written, it challenges the belief of the writer.

There are wells that "gush" and make a sensational display of oil when they first "come in," but they do not gush any longer than it takes for a crew of men to screw on a control head and to either direct the flow where it will mean money in the owner's bank account or to shut in the well until storage has been provided to receive it. There have been times when a gusher was uncontrollable and where an army of men were brought to the scene to build earthen storage to save a part of the precious fluid, but these have been exceptional cases. As a rule when the bit strikes the oil sand preparations have been made to take care of the production without wasting any of it.

Mostly Small Wells

The same average man may think also that all oil wells are large producers. As a matter of fact the average production of all the wells in the United States is under 7 bbls. per day per well.

In the month of January, 1924, the 286,569 wells in the United States produced 1,903,966 bbls. a day, or 6.64 bbls. per day per well.

About 82 per cent of the wells in the United States average about four-fifths of a barrel per day per well. It may be seen from a study of the accompanying production tables that 236,181 wells produce a total of 187,319 bbls. per day or .79 of a barrel per day per well.

There are 25,477 other wells, the total production of which is 429,923 bbls. a day, or an average of 16.88 bbls. per day per well.

The bulk of the production in the country comes from only 24,911 wells in the 24 leading fields which produce 1,286,724 bbls. per day, or an average of 51.65 bbls. per day per well.

The Backbone of the Industry

The 236,181 wells of less than 1 bbl. a day are the backbone of the producing industry. "Old, settled production" is the way they are collectively characterized. They will go on producing for many years, notwithstanding some of the wells have been producing for 40 and 50 years, but each succeeding year they will show a slight falling off until they reach the stage where they are no longer profitable, which will mean their abandonment. Many hundreds of wells are abandoned each year because they can no longer show a profit. Their places are filled by other wells more recently drilled, but which have arrived at the settled small production stage.

The wells in the 24 leading fields, in the course of time, will join the great majority of old, settled producers, although some of them will quit before they reach that stage. There have been new wells in some fields that ceased producing without any warning—dropped from hundreds or thousands of barrels to nothing in a day. At this writing, in the middle of March, the production of some of the 24 leading fields is considerably less than it was in January. The biggest producing field of all, Long Beach, California, which was making 218,646 bbls. a day in January had dropped to 214,000 bbls. a week ago and Santa Fe Springs, which was producing 138,006 bbls. in January, has fallen to 100,000 bbls. a day. Huntington Beach has slumped from 64,008 bbls. to 58,000 bbls. a day.

The instability of flush production is shown in the comparative performances of some of the leading fields. For example, Santa Fe Springs, California, averaged 322,521 bbls. a day last August, but had fallen to 138,006 bbls. in January, four months later. Long Beach, California, reached its peak in October, 1923, when it averaged 244,527 bbls. a day. In January, 1924, three months later, it had dropped to 218,646 bbls. a day. Powell, Texas, averaged 275,000 bbls. a day in November, 1923, and reached a one-day peak production of over 356,000 bbls., but in two months it had fallen to 94,800 bbls. a day. The Burbank Field in Oklahoma produced 121,764 bbls. a day in July, 1923, and fell off to 80,887 bbls. a day in six months. Tonkawa, Oklahoma, produced 112,232 bbls. a day in May, 1923, and had fallen to 39,723 bbls. a day in January of this year.

Some of the older fields which still maintain a place among the leaders were once very large producers. The Cushing Field, good for 23,369 bbls. a day in January, 1924, reached its peak one day in the summer of 1915, when it produced 300,000 bbls. Healdton, Oklahoma, down to 15,965 bbls. was good for nearly 100,000 bbls. about 8 or 9 years ago. Burkburnett, Texas, rated at 21,238 bbls. in January, 1924, produced 185,210 bbls. a day in September, 1921.

These comparative figures are given to show the average man outside the oil industry the uncertainty of oil production. There is no way of anticipating it and there is no way of stabilizing it. The only really dependable production is the old, settled kind, which varies little from year to year and there is not enough of this in a whole year to serve the needs of the industry for one summer month.

Only two fields, Burbank and Powell, in the 24 leading fields, are producing more oil at this time than they were in January. Many fields that have made history in the oil industry are not producing enough oil to keep them in the list of leaders. The Glenn Pool, in Oklahoma, which once produced 120,000 bbls. a day, was good for 8,832 bbls. a day in January of this year. The Bradford Field, in Pennsylvania, which reached a peak of 103,000 bbls. a day over 40 years ago, is producing 7,500 bbls. a day from about 15,000 wells, and there are other once big fields now carried in the "miscellaneous" column.

Facing a Crude Shortage

Facing a year in which the consumption of crude petroleum products promises to exceed all existing records, the industry is confronted with the fact that none of the leading fields will produce as much oil in 1924 as in 1923. Burbank may maintain a 100,000-bbl. production average for a good part of the year, as the territory has not all been drilled up, and Powell, in Texas, which has lately given substantial signs of a revival, owing to the discovery of what appears to be a deeper sand, may also stay above the 100,000-bbl. mark for some time. Salt Creek, Wyoming, is capable of producing more oil than it did in January and may do so when the Sinclair pipe line begins running oil late in the spring, but aside from these, there appears to be no hope of the others doing as well as they did in January. Their natural tendency will be to decline, the newer fields rapidly, the old fields slowly.

Summary of Crude Oil Production in the United States, January, 1924

	Oil Wells	Daily Prodn. Jan. 1924 (Bbls.)	Av. Daily Prodn. Per Well (Bbls.)
Oil fields averaging less than 1 bbl. per well per day	236,181	187,319	0.79
Twenty-four leading fields	24,911	1,286,724	51.65
All other fields	25,477	419,923	16.48
Total	286,569	1,893,966	6.61

Average Daily Production per Well in the Oil Fields of the United States in January, 1924

Field—	Oil wells	Daily prod. (bbls.)	Av. prod. per well (bbls.)	Av. prod. per well Jan., 1923 (bbls.)
New York	14,000	3,258	0.23	0.20
Pennsylvania	75,000	17,452	0.23	0.30
West Virginia	20,200	15,710	0.78	0.90
Ohio	39,300	16,580	0.42	0.50
Indiana	2,550	2,258	0.89	1.10
Illinois	16,725	20,323	1.22	1.40
Kentucky	11,300	19,174	1.70	2.10
Kansas	17,706	72,263	4.09	4.04
Oklahoma	57,217	399,606	6.98	7.50
North Central Texas	11,150	107,359	9.06	11.00
East Central Texas	1,217	133,057	109.30	106.30
Gulf Coast and Southwest Texas	2,901	99,920	34.44	.....
North Louisiana	3,215	54,084	16.80	22.90
Arkansas	2,099	118,925	56.70	54.60
Wyoming-Montana	2,188	149,400	68.30	52.50
California	9,801	674,597	68.83	55.30
Total	286,569	1,993,966	6.64	5.70

Note—The few wells and small production in Tennessee and Colorado in January are not recorded. A small number of wells in New Mexico, which were potential producers, but which were shut in most of the time are not recorded. The number of wells in Eastern Fields is conservatively estimated.

Most of the Oil Wells in the United States Average Less Than One Barrel Per Day

	Oil wells	Daily prod. Jan., 1924 (bbls.)	Av. prod. per well (bbls.)
New York	14,000	3,258	0.23
Pennsylvania	75,000	17,452	0.23
West Virginia	20,200	15,710	0.78
Ohio	39,300	16,580	0.42
Indiana	2,550	2,258	0.89
Kentucky	11,300	19,174	1.70
Illinois	16,725	20,323	1.40
Kansas	12,394	9,204	0.74
Oklahoma	43,586	80,475	1.84
North Texas	1,126	2,885	2.56
Total	236,181	187,319	0.79

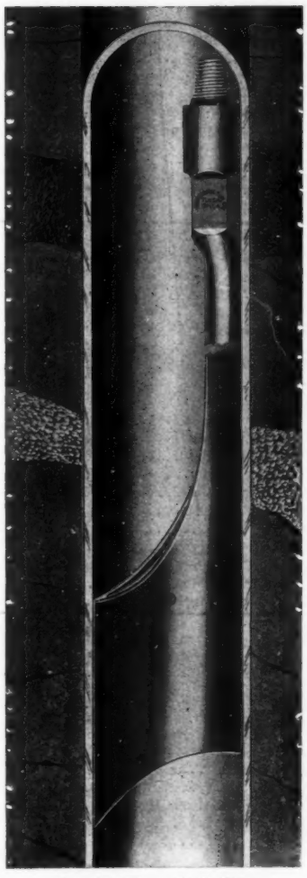
Crude Petroleum in January, 1924

	No. Oil Wells	Av. Daily Prod. Bbls.	Av. Prod. Per Well Bbls.
Long Beach, Cal.	362	218,646	604.0
Santa Fe Springs, Cal.	310	138,006	445.1
Salt Creek, Wyo.	890	118,493	133.1
Smackover, Ark.	1,107	101,361	91.5
Powell, Tex.	626	94,800	151.4
Midway-Sunset, Cal.	2,538	84,612	33.3
Burbank, Okla.	1,177	80,887	72.2
Huntington Beach, Cal.	278	64,088	230.9
Bristow, Okla.	854	42,605	49.9
Tonkawa, Okla.	617	39,723	64.4
Mexia, Tex.	524	34,708	66.2
Torrance, Cal.	139	31,363	225.6
Cushing, Okla.	2,533	23,369	9.2
Elk Hills, Cal.	128	22,406	175.0
Haynesville, La.	639	21,882	34.2
Burkburnett, Tex.	3,341	21,238	6.4
Holliday, Tex.	701	20,368	29.1
Hewitt, Okla.	740	20,008	27.0
Electra, Tex.	2,205	19,908	9.0
Kern River, Cal.	2,140	19,031	88.8
Hull, Tex.	184	18,596	101.0
Coalinga, Cal.	751	17,605	22.1
Montebello, Cal.	152	17,085	112.3
Healdton, Okla.	1,975	15,956	8.1
Total	24,911	1,286,724	51.65

Hinderliter Eccentric Combination Socket

(PATENTED)

Eccentric Combination Socket



Passing Through Casing

Saves Side-tracking Jobs

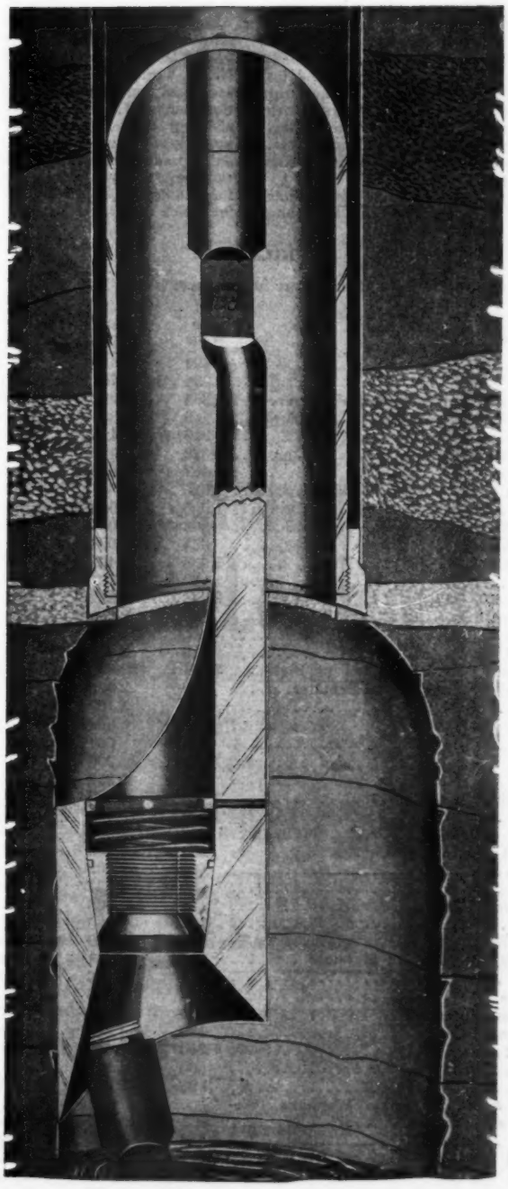
THE HINDERLITER ECCENTRIC COMBINATION SOCKET is designed for fishing out bits and other tools lost in cavey holes.

The illustration at right shows its operation in fishing below the casing a bit with broken pin which has fallen over to the side of the wall.

When the socket passes out of the casing and enters the enlarged hole below, the tools naturally swing to the center, permitting the bowl to extend far out into the caved portion.

The gripping device is composed of 3 slips bound by a flat steel ring—absolutely eliminating any tendency to displace a single slip. This construction produces the most efficient grip obtainable.

Where two tools were used formerly, a spud or bit hook and a socket, this HINDERLITER socket does the work of both. It is strong and rugged and will fish through cavings if necessary.



Fishing a Bit in a Cavey Hole

"The Biggest Little Tool Company in the Oil Country"

Hinderliter Tool Company

Manufacturers of and Specialists in Drilling and Fishing Tools

Branches in Principal Oil Fields

Tulsa, Okla.

The high point of production in the United States in 1923 was 2,215,752 bbls. a day in September. In four months it had declined 321,856 bbls. a day and it has further declined since. The total production of the United States last year was 738,877,176 bbls. according to The Oil and Gas Journal, while the United States Geological Survey estimates it roundly at 735,000,000 bbls. Several estimates made on what the production will be this year vary from 675,000,000 bbls. to 645,000,000 bbls., and in these various estimates the quantity of new production that may be developed this year is included.

Big Fields Must Be Found

It is absolutely necessary in order to keep production up to a point where it will meet the demands of the consuming public that new fields be discovered to take the place of those now on the decline. Whether or not a single very large producing field will be opened this year is still beyond the knowledge of man. There are a number of very promising pools in several States, including California, Colorado, Oklahoma and Kansas, but the swiftly declining production of some of the most prolific pools in the country will make it necessary that a large quantity of new production be brought to the surface this year to avert a possible crude oil famine.

Seven large pools were developed last year. This was unusual. Nine years elapsed between the crest days of the Glenn Pool and the peak production days of Cushing and three years more passed before the great Towanda Field in Kansas was opened.

It would take a dozen of the ordinary so-called "good pools" to equal a Cushing, or a Powell, or a Santa Fe Springs, in output. The oil industry is ever searching for just such fields. At this time, in every oil producing State in the Union, and in several States where there is no oil production, oil men and oil companies are drilling wells more or less removed from producing areas in the hope of developing new pools. Any one of these many hundreds of tests may open a big oil field, but the chances are based on the history of similar operations, that four out of five of them will be dry, and that some of the successful wildcat or test wells will be so far removed from a pipe line or refinery that the further development of the producing territory will be slow.

High Prices Stimulate Drilling

As production continues to fail the demand for crude will become keener, resulting in higher prices to the producer. This will stimulate drilling. More wildcatting or prospecting will be started. The higher the crude market goes the more drilling will result and the greater the number of test wells under way, the quicker we may uncover the crude production which at this time the industry needs as it appears never to have needed it before.

Accompanying this article are tables showing the average daily production by pool in every field west of the Mississippi River, with the number of oil wells in each pool and their average daily production per well; also a general summary showing the oil producing States, the number of oil wells in each, the average daily production and the average production per day per well. The figures are for January, 1924, the most recent month for which production figures are available.

OKLAHOMA

Production in January, 1924

Field—	Oil Wells	Daily Prod. Bbls.	Av. Daily Prod. per Well Jan. 1924 Bbls.	Av. Daily Prod. per Well Jan. 1923 Bbls.
Rogers County	4,494	1,499	0.33	0.47
Nowata County	9,234	4,751	0.51	0.59
Washington County	8,354	7,252	0.86	0.99
Bird Creek, Skiatook, Owasso and Turley	2,779	4,844	1.74	1.92
Jenks-Bixby	1,216	2,118	1.74	1.78
Boynton-Muskogee	1,022	1,499	1.47	1.77
Pickett Prairie	417	806	1.93	1.83
Red Fork	625	1,361	2.18	3.42
Morris	1,055	2,580	2.45	2.36
Sapulpa-Fisher	366	1,081	2.95	3.62
Broken Arrow	335	909	2.71	1.22
Bald Hill	1,038	2,422	2.33	2.66
Allen	173	397	2.29	2.54
Glenn Pool	2,743	8,832	3.22	3.37
Milroy-Loco	789	2,630	3.33	4.31
Okmulgee	565	1,922	3.40	3.57
Cleveland	780	3,340	4.28	4.34
Osage County outside of Burbank Field	7,601	32,232	4.24	5.03
Tiger Flats, Henryetta and Schulter	418	2,385	5.71	11.08
Walters	223	1,189	5.33	5.67
Keystone	151	862	5.71	*.....
Billings	75	534	7.12	13.07
Healdton	1,975	15,956	8.08	8.69
Garber	539	5,332	9.89	15.23
Mounds-Beggs	1,028	8,922	8.68	8.97
Cushing	2,533	23,369	9.23	10.42
Jennings	308	3,989	12.92	20.88
Blackwell and Deer Creek	181	2,295	12.68	13.34
Kilgore	15	202	13.47	None
Mervine	98	1,337	13.64	10.04
South Ponca	74	966	13.05	14.36
Cement	142	2,029	14.28	20.96
Eastern Bristow or Slick	494	7,829	15.84	19.66
Yale, Quay, Ingalls and Maramec	411	6,941	16.90	19.49
Duncan	524	9,166	17.49	20.76
Comanche	45	825	18.33	20.96
North Cushing or March Pool	90	1,785	19.83	25.73
Robberson	189	4,718	24.96	51.46
Hewitt	740	20,008	27.04	36.74
Brock	35	970	27.71	51.31
Fox	92	3,009	32.70	42.01
Deaner, Lyons, Wewoka, Wetumka, Weleetka and Okemah	503	16,275	32.36	31.44
Bristow	854	42,605	49.89	99.15
Tonkawa	617	39,723	64.38	444.06
Burbank	1,177	80,887	68.72	102.86
Sayre	6	433	72.17	None
Graham	101	12,465	123.41	92.65
Stroud	3	2,125	708.33	None
Total January, 1924	**57,217**	**399,606**	**6.98**	.....
Total January, 1923	**55,233**	**430,741**	.....	**7.80**

KANSAS

Production in January, 1924

Field—	Oil Wells	Daily Prod. Bbls.	Av. Daily Prod. per Well Jan. 1924 Bbls.	Av. Daily Prod. per Well Jan. 1923 Bbls.
Miami County	1,317	621	0.47	0.48
Wilson County	528	251	0.47	0.55
Woodson Miscellaneous	134	70	0.52	0.61
Neosho County	1,496	833	0.55	0.61
Montgomery County	2,863	1,637	0.57	0.72
Labette County	93	57	0.61	0.59
Linn County	505	391	0.77	0.77
Franklin County	849	670	0.79	0.78
Allen County	1,456	1,403	0.96	1.11
Chautauqua County	2,709	2,641	0.97	1.01
Bourbon County	128	126	0.98	1.21
Greenwood Miscellaneous	43	63	1.46	8.29
Elk County	316	504	1.59	2.17
Anderson County	323	1,564	4.84	5.05
Douglas County	39	201	5.15	5.04
South Augusta	409	2,355	5.75	6.77
North Augusta	226	1,343	5.94	6.55
El Dorado	1,125	6,833	6.07	6.77
Sluss	66	498	7.55	9.36
Robinson	100	782	7.82	10.01
Towanda	452	3,689	8.16	9.00
Lyon	7	59	8.43	13.04
Smock	35	221	8.84	11.83
Potwin	58	556	9.59	52.16
Fox-Bush	375	4,125	11.00	18.82
Sallyards	145	1,600	11.03	13.55
Virgil	567	6,728	11.86	13.19
Blankenship	107	1,479	13.82	23.79
Nuttle-Koogler	126	1,773	14.07	15.23
Wilson-Dunkle	165	2,441	14.80	23.16
Covert-Sellers	67	1,031	15.40	17.46
Florence	122	2,249	18.44	37.36
Teeter	63	1,331	21.13	20.53
Leon-Weaver	54	1,244	23.04	60.71
Peabody	152	3,765	24.77	33.61
Harvey County	5	128	25.60	None
Cowley County	74	2,186	29.44	31.58
Elbing	139	4,178	30.01	45.32
Paulhamus	36	1,341	37.25	.....
Thrall-Burkett	96	3,698	38.52	88.06
Seeley	135	5,481	40.60	73.33
Russell County	1	117	117.00	None
Total January, 1924	17,706	72,263	4.09	....
Total January, 1923	17,421	86,724	.....	4.97

NORTH LOUISIANA-ARKANSAS

Average Daily Production for January, 1924

North Louisiana

Field—	Oil Wells	Daily Prod. Bbls.	Av. Daily Prod. per Well Jan. 1924 Bbls.	Av. Daily Prod. per Well Jan. 1923 Bbls.
Bellevue	128	5,440	42.5	....
Elm Grove	37	1,091	29.5	....
Caddo	1,297	10,491	8.1	....
De Soto and Red River	586	5,440	9.3	....
Haynesville	639	21,882	34.2	....
Homer	528	8,740	16.6	....
Total	3,215	54,084	16.8	22.9

Arkansas

Field—	Oil Wells	Daily Prod. Bbls.	Av. Daily Prod. per Well Jan. 1924 Bbls.	Av. Daily Prod. per Well Jan. 1923 Bbls.
Smackover	1,107	101,361	91.5	....
El Dorado-Calion	824	14,763	17.9	....
Stephens	168	2,801	16.7	....
Total	2,099	118,925	56.7	*54.8

*United States Geological Survey.

Twenty-four Oil Fields in the United States Which Produced Most of the Country's

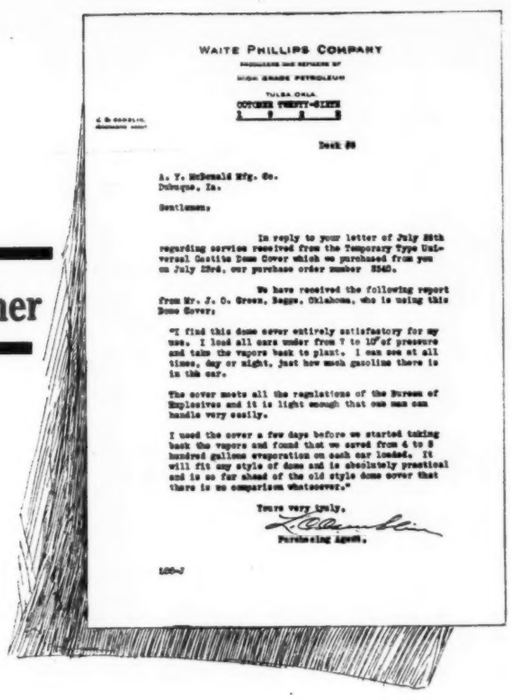
NORTH AND CENTRAL TEXAS

Production in January, 1924

Field—	Oil Wells	Daily Prod. Bbls.	Av. Daily Prod. per Well Jan. 1924 Bbls.	Av. Daily Prod. per Well Jan. 1923 Bbls.
Petrolia	465	294	.63	.65
Sipe Springs	167	239	1.43	1.74
Iowa Park and K. M. A.	494	2,352	4.76	5.60
Burkburnett	3,341	21,238	6.36	7.18
Rising Star	17	109	6.41	26.90
Miscellaneous	762	5,034	6.61	10.02
Gunsight	9	68	7.55	6.71
Caddo	548	4,575	8.35	14.50
Electra	2,205	19,908	9.03	12.45
Desdemona	314	3,022	9.62	11.90
Pioneer	165	2,065	12.51	*.....
Ranger-Eastland	650	8,537	13.10	16.30
Breckenridge	826	12,266	14.85	20.10
Clear Fork	486	7,284	15.00	30.90
Holliday	701	20,368	29.06	32.08
Currie	67	3,549	52.97	.....

McDONALD

Here's Another Strong Letter



WAITE PHILLIPS COMPANY

PRODUCERS AND REFINERS OF HIGH GRADE PETROLEUM

TULSA, OKLA.

COPPER TWENTY-SEVEN

Dock #8

A. Y. McDonald Mfg. Co.
Dubuque, Ia.

Gentlemen:

In reply to your letter of July 26th regarding service received from the Temporary Type Universal Gastite Dome Cover which we purchased from you on July 17rd, our purchase order number 3540.

We have received the following report from Mr. J. O. Green, Beggs, Oklahoma, who is using this Dome Cover:

"I find this dome cover entirely satisfactory for my use. I load all cars under from 7 to 10 of pressure and take the vapors back to plant. I can see at all times, day or night, just how much gasoline there is in the car.

The cover meets all the regulations of the Bureau of Explosives and it is light enough that one man can handle very easily.

I used the cover a few days before we started taking back the vapors and found that we saved from 4 to 5 hundred gallons evaporation on each car loaded. It will fit any style of dome and is absolutely practical and so far ahead of the old style dome cover that there is no comparison whatsoever."

Yours very truly,

Purchasing Agent.

LDS-J

Waite Phillips Saved 4 to 5 Hundred Gallons on Each Car Loaded

Universal Gastite Dome Cover
Temporary Type

Permanent Type, with Cast Steel Top in Position

J. O. Green, Waite Phillips Company, Beggs, reported to headquarters:

"I find this dome cover entirely satisfactory for my use. I load all cars under 7 to 10 lbs. pressure and take the vapors back to plant. I can see at all times, day or night, just how much gasoline is in the car.

"The cover meets all the regulations of the Bureau of Explosives and it is light enough that one man can handle very easily.

"I used the cover for a few days before we started taking back the vapors and found that we saved from 4 to 5 hundred gallons evaporation on each car loaded. It will fit any style of dome and is absolutely practical and **so far ahead of the old style dome cover that there is no comparison.**"

The UNIVERSAL GASTITE DOME COVER offers you a chance to save money. Ask for our fully descriptive folder.

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A. Y. M DONALD MFG. CO.

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Branches: OMAHA MINNEAPOLIS DES MOINES

Complete stocks also carried by Butler Mfg. Co., Kansas City, Mo.; Sharpsville Boiler Works Co., Sharpsville, Pa.

EST. 1866 McDonald

"The PIONEERS in Offering Complete Bulk Station Equipment"

Mexia	524	34,708	66.24	†106.30
Powell	626	94,800	151.44	None
Total January, 1924	12,367	240,416	19.44	.....
Total January, 1923	10,648	181,956	.....	17.09

*Included Currie. †Included in Miscellaneous.

WYOMING-MONTANA
Average Daily Production for January, 1924

Field—	Oil Wells	Daily Prod. Bbls.	Av. Daily Prod. per Well Jan. 1924 Bbls.	Av. Daily Prod. per Well Jan. 1923 Bbls.
Salt Creek	890	118,439	133.1	....
Teapot	64	4,147	64.8	....
Big Muddy	223	3,337	14.9	....
Grass Creek	334	3,115	9.3	....
Elk Basin	135	1,332	9.1	....
Greybull-Torchlight	14	131	9.4	....
Rock River	52	3,279	65.0	....
Lance Creek	26	2,010	77.3	....
Poison Spider-South Casper Creek	5	295	59.0	....
Osage	126	664	5.3	....
Hamilton Dome	20	505	25.3	....
Lander	34	414	13.1	....
Pilot Butte	18	84	4.7	....
Lost Soldier	63	6,554	104.0	....
Cat Creek, Mont.	98	4,661	47.6	....
Kevin-Sunburst	84	433	5.1	....
Notches	2	.....	.....	....
Total	2,188	149,400	68.3	*52.5

*United States Geological Survey.
†Included active wells only.

CALIFORNIA
Production in January, 1924

	Oil wells	Daily prod. Jan., 1924	Av. daily prod. per well, Jan. 1924	Av. daily prod. per well, Jan. 1923
Kern River	2,140	19,031	88.8	....
McKittrick	285	5,686	20.0	....
Midway-Sunset	2,538	84,612	33.3	....
Elk Hills	128	22,406	175.0	....
Lost Hills-Belridge	235	3,446	14.2	....
Coalinga	751	17,605	22.1	....
Wheeler Ridge	8	750	93.7	....
Watsonville	6	58	9.7	....
Santa Maria	312	8,211	26.3	....
Summerland	135	146	1.1	....
Ventura-Newhall	549	9,124	16 6	....
Los Angeles-Salt Lake	620	3,132	50.4	....
Whittier	179	2,041	11.4	....
Fullerton	386	9,795	25.4	....
Coyote	107	4,177	38.9	....
Santa Fe Springs	310	138,006	445.1	....
Montebello	152	17,065	112.3	....
Richfield	179	13,376	74.7	....
Huntington Beach	278	64,088	230.9	....
Long Beach	362	218,646	604.0	....
Torrance	139	31,363	225.6	....
Compton	2	1,834	917.0	....
Total	9,801	674,597	68.83	55.3

GULF COAST AND SOUTHWEST TEXAS
Production in January, 1924

	Oil wells	Av. daily prod.	Av. daily prod. per well, Jan., '24	*Av. daily prod. per well, 1922
Batson	325	1,112	34.2	....
Blue Ridge	14	675	48.2	....
Barber Hill	16	293	18.3	....
Dayton	7	87	12.5	....
Damon Mound	29	1,776	61.2	....
Edgerly	10	352	35.2	....
Goose Creek	219	13,223	60.4	....
Humble	291	5,486	18.5	....
Hull	184	18,596	101.0	....
Jennings, La.	45	666	14.8	....
Markham	28	99	3.6	....
Orange	195	11,823	60.4	....
Pierce Junction	9	700	77.8	....
Spindletop	97	845	8.7	....
Saratoga	262	1,677	6.4	....
Sour Lake	374	4,790	12.8	....
Somerset-Piedras Pintas	326	2,609	8.0	....
Vinton, La.	76	5,455	71.8	....
Welsh-Anse La Bute, La.	6	51	8.4	....
West Columbia	106	13,662	128.9	....
Miscellaneous	282	13,550	12.6	....
Total	2,901	99,920	31.0	*44.5

*United States Geological Survey.

INTRINSIC VALUE OF OIL RISING

Students of oil matters believe that in the light of widening demand for petroleum and conditions related to production, the value of crude oil must necessarily rise to a higher level. The practical factors considered in reaching this conclusion are the difficulties foreseen in maintaining the high rate of flush production, higher costs due to the necessity of drilling deeper for oil and increased expenditure necessitated in opening up remote territories.

PETROLEUM INDUSTRY BRINGS PROSPERITY TO MANY OTHERS

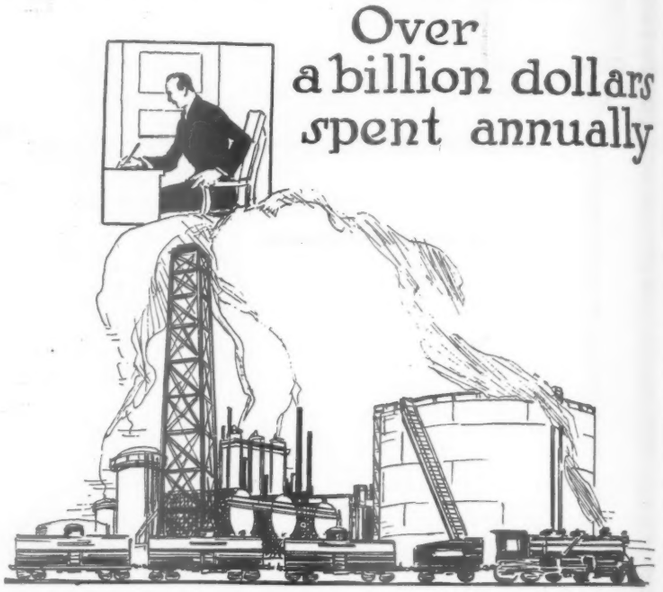
It is estimated that the petroleum producing and refining industry spend over a billion dollars annually in the purchase of supplies, materials, fuel and power.

It contributes by its gigantic purchases to the prosperity of the steel, automotive, lumber, rope, explosives, paint, cement, brick, chemical, scientific apparatus, engine, pump, coal and numerous other industries.

It is estimated that annual purchases of supplies for well drilling alone amount to something like $500,000,000.

The petroleum industry is probably the largest single industry purchaser of motor trucks for use in the field and in the marketing of gasoline and kerosene.

Besides its investment in pipe lines for the transportation of crude oil, the petroleum industry is one of the heaviest railroad shippers contributing largely to railroad revenues and prosperity. It is estimated that in 1923 40,000,000 tons of crude oil and refined petroleum products were shipped by railroad.



COST OF REFINING A BARREL OF OIL

(Continued from Page 90)

from the refiner's viewpoint became rapidly worse and by May, based on 15-cent premium for crude, the plants were operating at a loss.

The refiners endeavored to improve their situation in June by getting higher prices for refined products and the loss of May was changed to profit for the following month. Competitive conditions soon brought an end to this improved situation and before the end of the month gasoline prices continued downward. By August it was generally conceded that plants were being operated with the view of reducing the assured losses to a minimum.

Governor McMaster's Cut

It is worthy of note that in August, when Governor McMaster obtained nation wide prominence by arbitrarily bringing about a substantial reduction in gasoline prices in South Dakota, the **Oklahoma refining industry as a whole was losing from 43.6 cents to 58 6 cents on every barrel of crude oil they were running through their stills. Conditions became worse in September and the loss increased to between 55 and 70 cents a barrel.**

The gasoline purchased by the State of South Dakota is understood not to have come from Oklahoma. However, South Dakota is part of the marketing territory of Oklahoma refiners and the gasoline purchased in another refining area was available in the Mid-Continent section withi na fraction of a cent of the price paid. There was some improvement in October and this continued until the end of the year so that refiners in the final month only showed a 10-cent per barrel loss.

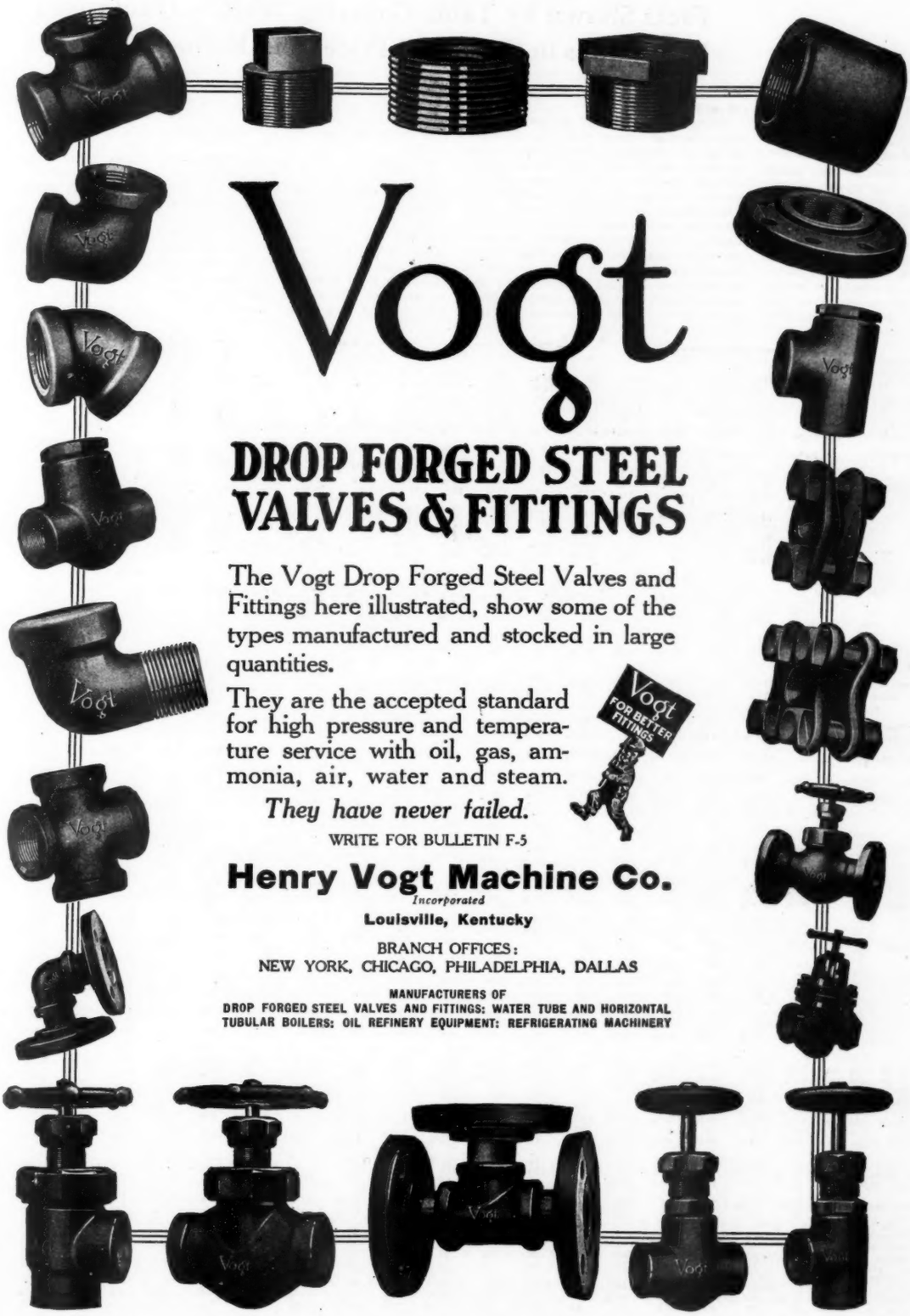
There were no doubt a few plants in Oklahoma and the refining industry generally which at least broke even in actual operations with a small return on the investment over the entire year. Also it is known that the losses of many plants greatly exceeded the average loss of 16 cents a barrel, based on a 15-cent premium for a crude supply. Many plants lost heavily on the storage of crude and refined products and these losses are only partially accounted for in the tables.

In Table 3, costs for the year, **based on the Federal Trade Commission method of calculation** are given. Briefly, this method distributes the cost based on the yields. Refineries generally do not use this method. Many are accustomed to determine their total costs and subtract from it the sum of the yields of all products except gasoline. As the most important product, an attempt is then made to obtain for gasoline a price which will cover the remainder of the expenses and **give a fair return on the investment.**

FINDING OF OIL TAKES COURAGE

Finding oil is a heartbreaking enterprise. The courage of organizations that persist to the point of success is impressive. The lease man must search diligently and wisely in the face of keen competition to secure desirable tracts of oil bearing land and if favorably located geologically, or in relation to other producing tracts, a bonus ranging from $50 to $3,500 per acre for moderately priced lands must be paid to secure the oil and gas lease. The lease entitles the holder to enter upon the land and drill for petroleum.

If drilling operations are delayed longer than the stipulated term, usually one year, an annual rental is due thereafter during the life of the lease unless and until production is secured from the lease, at which time the royalty payments, being a part of the products secured from the lease, usually one-eighth, are paid to the owner of the land in lieu of rentals.



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Prices of Refined Oil Products Showed

Facts Shown by Table Covering Weekly Quotations in All Refining Reductions in Crude Oil Prices and Refined Products Were First to

(Tables giving average prices first six months of the year, second six months and yearly averages found on page 100.)

As in the case of crude oil and the retail quotations of gasoline and other refined products the year 1923 was one of declining prices at the refineries. In order that this fact may be more clearly visualized for the entire year, the accompanying table was prepared giving the weekly domestic and export quotations of 75 refined products at representative refining centers throughout the United States. The table was compiled from the weekly market reports of The Oil and Gas Journal.

The table is submitted as proof of two contentions in regard to all the markets of the oil industry. In the first place the table shows that all refining areas are affected when, due to an overproduction of crude oil, more gasoline and other refined products are manufactured than the consuming market is able to absorb. Comparing the weekly refinery prices in Oklahoma, Kansas, Gulf Coast, Pennsylvania and the eastern market shows prices declined approximately the same. This is even more apparent when figures given in the summaries on page 100 are compared. That table shows that the decline in prices for the two six-month periods and the entire year was practically uniform for the same grade product.

In regard to motor gasoline grades it will be found that the reduction in price compares favorably with the total reductions in the gasoline tank wagon prices given elsewhere in this issue. Further the same comparison can be made in regard to crude prices in the fields from which the refineries secured their supply of raw material. As was to be expected the declines in the crude, refinery and tank wagon prices are not same from week to week. Refined products which with the exception of fuel oil are quoted on a gallon basis, do not ordinarily vary from week to week more than ⅛ to ¼-cent a gallon. The table shows refinery prices generally lead in the price decline, a development which is true of the manufacturing end of any major industry.

The inability of the refiner to pay current prices for his crude due to his own declining market and the fact that his competition was selling at constantly lower prices to the wholesaler brought the inevitable decline in the crude and the gasoline tank wagon prices. This

	January					February				March				April				May				
Gasoline and Naptha—	2	9	16	23	30	6	13	20	27	6	13	20	27	3	10	17	24	1	8	15	22	1
Oklahoma (Group 3):																						
50-52, 450, end point	.09½	.09⅝	.10⅝	.11	.12	.13	.12½	.13¼	.13½	.13⅜	.13¼	.12⅝	.12½	.12¼	.12¼	.12	.12	.11⅝	.11	.10¾	.10⅜	.11
56-58 450 end point	.10⅜	.10⅝	.11¼	.11½	.12⅜	.12⅝	.13¼	.13⅜	.13⅝	.13⅜	.13⅜	.13	.12⅝	.12¼	.12⅜	.12⅛	.11⅝	.11¼	.10¼	.10	.10¼	.11
58-60, 437 (New Navy)	.11	.11¼	.11⅜	.12⅛	.13	.13¼	.13⅜	.14⅛	.14⅛	.14⅜	.14	.13⅛	.13	.13	.13	.12⅜	.12	.11⅜	.10⅛	.10¼	.10⅛	.11
60-62, 400 end point	.13	.13¼	.13½	.14	.14⅜	.14⅝	.15	.15⅛	.15½	.15⅛	.15	.15	.15	.14½	.14⅜	.14¼	.13¾	.13¼	.12¼	.12	.13⅛	.13
64-66, 375 end point	.15	.15	.15¼	.15¼	.15⅝	.15⅝	.16	.16¼	.16½	.16⅛	.16¼	.16¼	.16	.15⅝	.15⅝	.14¼	.14¼	.14¼	.13¼	.13	.13⅛	.14
68-70, 350-365 end point	.17¼	.17	.16⅝	.16½	.16½	.17	.17¼	.17¼	.17½	.17⅝	.17⅛	.17	.17	.16⅝	.16⅝	.16	.16	.15½	.15	.15	.15	.15
Kansas:																						
58-60, 427 (New Navy)	.10⅝	.11¼	.12¼	.13⅛	.13¼	.13⅜	.14	.14⅜	.14⅜	.15	.14⅛	.13⅛	.13¼	.13	.13	.13	.12	.11⅝	.11¼	.10¼	.11	.11
North Texas:																						
50-52, 456 end point	.08¼	.10⅛	.10½	.11¼	.11⅜	.12⅛	.13	.13	.13⅛	.13⅛	.13¼	.13	.12⅝	.12⅛	.12⅛	.12¼	.11¼	.11	.10¼	.10	.10⅛	.11
58-60, 437 (New Navy)	.10½	.11	.11⅜	.12¼	.12⅝	.13¼	.14	.14	.14⅜	.14¼	.14¼	.13⅝	.13	.13	.13	.13	.12¼	.11½	.10⅝	.10¼	.11¼	.11
64-66, 390 end point	.14⅛	.14⅛	.15	.15	.15⅛	.15⅝	.15½	.15½	.16	.16	.16	.16	.15⅝	.15	.16	.15	.15	.14⅝	.13½	.13	.12⅝	.13
Pennsylvania:																						
52 naphtha	.13¼	.13½	.13¾	.14⅛	.14⅛	.14½	.14⅝	.15⅛	.16	.16	.16	.16	.16	.15	.15	.15	.14⅝	.14¼	.13⅝	.13⅛	.13¼	.13
58 gasoline	.14⅝	.14⅝	.14⅝	.15	.15	.15½	.16	.16⅝	.17¼	.17¼	.17¼	.17	.17	.16⅝	.16¼	.16¼	.15⅝	.15	.14⅛	.14¼	.14	.14
60 gasoline	.15⅝	.16	.16	.16	.16	.16½	.17	.17	.18¼	.18¼	.18¼	.18	.18	.17⅝	.16⅝	.16⅛	.16	.16	.15½	.15¼	.16	.16
64 gasoline	.18¼	.18¼	.18¼	.18¼	.18¼	.18⅝	.19¼	.19¼	.20¼	.20½	.20½	.20½	.20½	.20½	.20½	.20½	.18⅝	.17⅝	.17⅝	.17¼	.17¼	.17
68-70 gasoline	.23	.23½	.23½	.23	.23½	.23½	.23	.23½	.23⅝	.23½	.23½	.23	.22⅝	.22⅝	.22½	.22½	.22	.21⅝	.21½	.21¼	.21¼	.21
Natural Gasoline—																						
Oklahoma (Group 3):																						
Grade A, 72-75, under 375 e. p. rec. 90%	.12	.12	.12½	.12⅝	.13	.13⅝	.14	.14⅜	.14⅜	.14¼	.13⅝	.13	.13¼	.12¼	.11¼	.11	.10¼	.08⅝	.08¼	.07⅝	.07⅝	.10
Gr. B, 76-83, 375 e. p. rec. 85%	.11¼	.11⅜	.12	.12¼	.12½	.13¼	.13¼	.13½	.13⅝	.13⅝	.13¼	.12⅝	.12	.12	.11	.10⅝	.10	.08¼	.08	.07½	.07¼	.09
Gr. C, 80-83, 350 e. p. rec. 78%	.11⅛	.11⅛	.11⅝	.12	.12¼	.13	.13	.13¼	.13⅜	.13⅜	.13	.12¼	.11¼	.11	.10	.09⅝	.08¼	.07¼	.06⅛	.06½	.06¼	.08
North Texas:																						
72-76 absorption	.12¼	.12	.12	.12	.12¼	.13⅝	.13¼	.13½	.14	.14	.13⅝	.13½	.13	.12	.11	.10⅛	.10	.08⅛	.07½	.07½	.07⅝	.08
80-84 compression	.12	.10½	.10½	.11½	.11⅝	.12¼	.13	.13	.13½	.13⅜	.13¼	.13¼	.12⅝	.11½	.10½	.10	.08⅝	.08¼	.07¼	.06½	.06⅝	.08
Motor Natural Gas. (Blend)—																						
Oklahoma:																						
60-62, 450 end point	.10½	.10½	.11	.11	.11⅜	.12⅛	.12⅝	.13	.13½	.13⅛	.13	.12	.11⅝	.11⅜	.12	.11⅝	.11	.10⅝	.10	.09⅝	.10	.11
68-70, 430-435 end point	.10	.10	.10½	.11½	.12⅛	.13	.13¼	.13⅝	.13	.14	.13½	.13¼	.12¼	.12¼	.12¼	.12⅛	.11⅝	.11	.10⅝	.10	.09⅛	.09
Burning Oil—																						
Oklahoma:																						
41-43 water white kerosene	.04⅝	.04¼	.04¼	.04⅝	.04⅝	.05	.04¼	.04¼	.04¼	.04⅝	.04¼	.04¼	.04⅛	.04⅛	.04⅛	.04	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03
42-43 water white kerosene	.04⅝	.04½	.04⅜	.05	.05	.05¼	.04⅝	.04⅝	.04⅜	.04⅝	.04⅜	.04½	.04¼	.04¼	.04¼	.04¼	.04	.04	.04	.04	.04	.04
Kansas:																						
41-43 water white kerosene	.05	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04½	.04⅛	.04⅛	.04⅛	.04⅛	.04⅛	.04⅛	.04⅛	.04	.04¼	.04¼	.04¼	.04	.04
North Texas:																						
41-43 water white kerosene	.04¼	.04¼	.04⅜	.04	.04⅛	.04⅛	.04	.04¼	.04	.04	.04	.04	.04	.04	.04	.04	.03⅝	.03⅝	.03½	.03⅜	.03⅛	.03
Pennsylvania:																						
43 kerosene prime white	.07¼	.07¼	.07¼	.07⅛	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07¼	.07	.07	.06⅝	.06⅛	.06½	.06	.06	.06	.06
45 kerosene water white	.07⅝	.07⅝	.07⅝	.07⅝	.07⅝	.09	.07⅝	.07⅝	.07⅝	.07⅛	.07⅛	.07⅛	.07⅛	.07¼	.07¼	.07	.06⅝	.06½	.06⅝	.06¼	.06⅛	.06
Fuel Oils—																						
20-22 (El Dorado)	.75	.75	.75	.70	.70	.85	.85	.90	.90	.90	.85	.85	.85	.90	1.00	1.00	1.00	1.00	.90	.85	.80	.85
Kansas:																						
24-26 fuel oil	.95	1.00	1.05	1.05	1.10	1.10	1.05	1.10	1.10	1.15	1.15	1.10	1.10	1.15	1.20	1.20	1.15	1.10	1.05	1.10	1.10	1.10
36-38 distillate	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03½	.03⅝	.03⅜	.03½	.03½	.03⅜	.03⅜	.03⅜	.03¼	.03¼	.03	.03⅜	.03⅜	.03
Oklahoma:																						
24-26 fuel oil	.90	.90	.95	1.00	1.00	1.00	1.05	1.05	1.05	1.05	1.05	1.05	1.07	1.10	1.15	1.15	1.15	1.15	1.00	1.05	1.05	1.05
32-36 gas oil	.02⅝	.02⅝	.02⅞	.03	.03	.03½	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03⅜	.03⅜	.03⅜	.03½	.03⅜	.02⅝	.02⅝	.02⅝	.02
28-40 straw distillate	.02¼	.03¼	.03⅜	.03⅜	.03⅜	.03⅜	.03½	.03½	.03½	.03¼	.03¼	.03¼	.03¼	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03¼	.03¼	.03¼	.03
North Texas:																						
24-26 fuel oil	.85	.85	.85	.95	.95	.95	1.00	1.15	1.15	1.15	1.15	1.15	1.10	1.05	1.05	1.15	1.15	1.10	1.05	1.00	.95	.95
32-36 gas oil	.02½	.02¼	.02½	.02½	.02½	.02½	.02⅝	.03¼	.03	.03	.03	.03	.03	.03	.03	.03	.03	.02 2/3	.02¼	.02½	.02⅝	.02
38-40 straw distillate	.02⅝	.02⅝	.03	.03	.03	.03	.03	.03½	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.02⅝	.02⅝	.02⅝	.02
North Louisiana:																						
Fuel oil	.85	.85	.85	1.00	1.05	1.05	1.20	1.10	1.10	1.10	1.05	1.00	1.05	1.20	1.20	1.20	1.20	1.20	1.15	1.10	1.10	1.00
Gulf Coast:																						
Gas oil	.04	.04	.04	.04	.04	.04	.04½	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.04⅝	.04⅜	.04⅝	.04
Fuel oil	1.25	1.35	1.35	1.35	1.35	1.35	1.45	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.55	1.55	1.40	1.40
Pennsylvania:																						
30°-34° fuel oil	.05⅝	.06	.06	.06	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.05⅝	.05⅝	.05⅝	.05⅝	.05⅝	.05⅝	.05	.05	.04⅝	.04
36°-40° fuel oil	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06	.06	.05⅝	.05⅝	.05⅝	.05⅛	.05⅛	.05⅛	.05
34° neutral	.07⅛	.07⅛	.07⅛	.07⅜	.07⅝	.08	.08⅛	.09	.10	.10	.10	.09⅝	.09⅝	.09⅝	.09⅝	.09⅝	.09¼	.09¼	.08½	.08½	.08⅛	.08
Neutral Oils—																						
Oklahoma:																						
160 vis., 3 color 20-25 cold test	.05⅝	.05⅝	.05⅝	.06¼	.06¼	.07¼	.06⅝	.06⅝	.06⅝	.07¼	.07⅛	.07¼	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06
180 vis., 3 color 21-25 cold test	.11⅛	.11⅛	.11⅛	.10⅜	.10⅝	.11⅜	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12
200 vis., 3 color 23-28 cold test	.12	.12	.12	.12	.12	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13
180 vis., 5 color 23-28 cold test	.10	.10	.10	.10	.10	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11
200 vis., 5 color 23-28 cold test	.10½	.10½	.10½	.10½	.10½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.11½	.13	.13
240 vis., 5 color 25-30 cold test	.12½	.12½	.12½	.12½	.12½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13½	.13
590-600 bright stock	.26	.26	.26	.26	.26	.27	.27	.27	.27	.27	.27	.27	.27	.27	.27	.27	.27	.27	.27	.27	.27	.27
124-126 white crude scale wax	.02¼	.02¼	.02¼	.02¼	.02¼	.02⅜	.02⅝	.02⅝	.02⅝	.02¼	.02¼	.02¼	.02¼	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02
Pennsylvania:																						
200 S color	.23	.24	.24½	.26	.27	.28	.31	.32	.32½	.33	.33	.33	.33	.33	.33	.33	.33	.33	.33	.33	.33	.33
600 Pennsylvania flash	.17	.17	.17½	.17⅝	.18	.18	.20	.21⅝	.22	.22	.22	.21½	.21	.20½	.20½	.20⅝	.20	.19½	.19½	.19⅝	.19⅝	.19
Pennsylvania bright stock	.33	.33	.33¼	.33½	.33½	.34⅛	.35	.40	.40	.40	.40	.38	.39	.38	.38	.37⅜	.36⅛	.36⅛	.36½	.36⅛	.36⅜	.36
Gulf Coast:																						
No. 3 color, 200 vis., pale oil	.11⅛	.11½	.12	.12	.13	.12	.12½	.12½	.12½	.12½	.12½	.12⅝	.12⅝	.12⅝	.12⅝	.12⅝	.12⅝	.12⅝	.12½	.12½	.12⅝	.12
No. 5, 200 vis., red	.09	.09	.10	.10	.10	.10	.10⅛	.10⅛	.10⅛	.10⅛	.10½	.10½	.10½	.10½	.10½	.10½	.10½	.10½	.10	.10½	.10⅝	.10
New York Domestic Market:																						
Gasoline, bulk, delivered, N. Y.	.16	.16	.16	.16	.16	.16	.16	.16	.16	.20	.20	.20	.20	.20	.20	.20	.20	.16	.16	.16	.16	.16
Cylinder, extra light filtered	.37	.37	.37	.37	.37	.37	.38	.38	.38	.38	.40	.40	.40	.40	.40	.40	.40	.40½	.40⅛	.40⅛	.40⅛	.40
Cylinder, bright stock	.45	.45	.45	.45	.45	.45	.46	.46	.46	.46	.47	.47	.47	.47	.47	.47	.47	.47⅛	.47⅛	.47⅛	.47⅛	.47
Paraffin, 903 spec. gravity	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24	.24⅛	.24⅛	.24⅛	.24⅛	.24
Bunker oil 14 plus delivered in barges, bbl.	1.45	1.50	1.50	1.50	1.50	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70
Diesel oil, at refinery, gal.	.04¼	.04¼	.04¼	.04¼	.04¼	.04¼	.04½	.04⅝	.04⅝	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04¼	.04½	.04⅛	.04⅛	.04
120-122 a. m. p. wax	.03	.03	.03	.03	.03	.03	.03⅛	.03⅛	.03⅛	.03⅛	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03
New York Export Market:																						
Motor gasoline in gal. cases	.28⅝	.28⅝	.28⅝	.28⅝	.28⅝	.28⅝	.28⅝	.28⅝	.29⅝	.29¼	.29⅝	.29⅝	.29⅝	.29⅝	.29⅝	.29⅝	.29⅝	.29⅝	.28¼	.28¼	.28¼	.28
Motor gasoline, U. S. Navy	.15½	.15½	.15½	.15½	.15½	.15½	.15½	.16⅛	.16⅛	.16½	.16½	.16½	.16½	.16½	.16½	.16½	.16½	.16	.15	.15	.15	.15
Naphtha 60° p. 39-61 ap. grav.	.18	.18	.18	.18	.18	.18	.18	.18	.19	.19	.19	.19	.19	.19	.19	.19	.18	.17½	.17½	.17½	.17½	.17
Standard white kero. bulk, gal.	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.06½	.06	.06	.06	.06	.06
Standard white in bbls., gal.	.13¼	.13¼	.13¼	.13¼	.13¼	.13¼	.13¼	.13¼	.13¼	.13¼	.13¼	.13¼	.13¼	.13¼	.13¼	.13¼	.13¼	.13	.13	.13	.13	.13
Standard white in cases	.16	.16	.16½	.16½	.16½	.16½	.16½	.16½	.16½	.16½	.16½	.16½	.16½	.16½	.16½	.16½	.16½	.16	.15½	.15½	.15½	.15
Water white in bulk	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.07½	.07	.07	.07	.07	.07
Water white in barrels	.14¼	.14¼	.14¼	.14¼	.14¼	.14¼	.14¼	.14¼	.14¼	.14¼	.14¼	.14¼	.14¼	.14¼	.14¼	.14¼	.14¼	.14	.14	.14	.14	.14
Water white in cases	.17½	.17½	.17½	.17½	.17½	.17½	.17½	.17½	.17½	.17½	.17½	.17½	.17½	.17½	.17½	.17½	.17	.16¼	.16¼	.16¼	.16¼	.16

Effect of Overproduction During 1923

Sections East of the Rocky Mountains. Declines Usually Preceded Evidence Recovery. Average Prices for the Year Are Also Shown

decline at the refinery, as in the case of crude oil and gasoline to the consumer, did not affect all refining centers at exactly the same time.

The following prices are f. o. b. refinery in sellers' cars, unless otherwise noted. The quotations as carried weekly in The Oil and Gas Journal are based on the prices at which the bulk of the product on the date designated was moving from the refineries. In several refining areas in the weekly price tables it is customary to give a spread of from ⅛ to 1 cent on gasolines, kerosenes, and other products in which the gallon is the price unit, with a spread of from 2½ to 15 cents a barrel on products quoted with the barrel as the price unit. The low weekly quotations are given in the following table to which the customary spread can be added if data giving the average prices for the six months and yearly periods are desired.

The table on average prices shows that 58-60, New Navy, the principal motor grade declined 5.06 cents in Oklahoma based on comparison covering the average price the first six months of 1923 and the second six months. For Kansas the decline based on the same comparison was 5.05 cents and in North Texas 5.12 cents. The decline in 58 gasoline in Pennsylvania was 4.02 cents for the same period. In Oklahoma 60-62, 450 blend, another motor fuel grade declined 4.65 cents. These figures indicate the uniformity of the price decline in representative refining areas in the United States as it affected the principal motor grades.

The same situation is apparent in other products. The decline in kerosene based on average prices for the two six-month periods of 1923 was within a fraction of a cent the same. In Oklahoma the decline was .19 cents, in North Texas .11 cents and in Pennsylvania .56 cents. In fuel oil the comparisons shows that fuel oil declined 31.93 cents in the Gulf Coast area, 28.89 cents in North Texas, 23.30 cents in Oklahoma and 30.24 cents in Pennsylvania. These comparisons are all based on the six month average figures. When these price declines of the principal products are compared week to week it will be found that one or more of the refining areas led in price drops to be followed within one to four weeks by all other sections. This is due to the fact that although separated several hundred miles in some cases, all refining areas are in a very direct sense competing with one another.

June			July					August					September				October				November				December			
12	19	26	3	10	17	24	31	7	14	21	28	4	11	18	25	2	9	16	23	6	13	20	27	4	11	18	25
11½	.10¼	.09⅜	.09⅜	.09	.09	.09	.08½	.08¼	.07⅝	.07	.06¾	.06¼	.06	.06	.06	.06	.06	.06	.06	.05⅝	.05⅝	.05¼	.05⅛	.05⅝	.06	.06½	.07
11	.10¼	.09⅛	.09⅛	.09¼	.09¼	.09	.08⅝	.08¼	.07⅝	.07	.06½	.06	.06	.06	.06	.06¼	.06½	.06¼	.06¼	.06	.06	.06	.06	.06¼	.06⅛	.06⅜	.07¼
11¼	.10½	.10	.09⅛	.09⅛	.09¼	.09	.08⅝	.08¼	.07⅜	.06⅝	.06⅜	.06¼	.06	.06¼	.06⅜	.06¼	.06⅜	.06⅜	.06⅜	.06¼	.06¼	.06⅜	.06⅜	.06⅜	.06⅜	.07¼	.07½
12⅜	.12	.11⅜	.11⅛	.11	.11	.10⅝	.10⅜	.10	.09⅛	.09	.08⅝	.08⅝	.08	.08¼	.08¼	.08¼	.08¼	.08¼	.08¼	.07⅝	.07⅛	.07¼	.07⅛	.07⅛	.08	.08¼	.08⅝
13⅛	.13	.12⅜	.12⅛	.12	.12	.11⅝	.11⅛	.10⅝	.10⅜	.10¼	.10	.09⅝	.09¼	.09¼	.09¼	.09¼	.09¼	.09⅛	.09⅛	.08⅝	.08⅛	.08¼	.08¼	.08⅛	.08⅝	.09	.09
13⅝	.13	.13	.14	.13¼	.13⅛	.13¼	.13	.12⅝	.12	.11¼	.11	.10⅝	.10⅝	.10⅝	.10⅝	.10⅝	.10⅝	.10⅝	.10⅝	.10¼	.10	.09⅝	.09⅝	.09⅛	.09⅝	.10	.10
11½	.10½	.10	.10	.09½	.09⅝	.09⅝	.09	.08⅝	.08¼	.07⅜	.07	.06⅝	.06½	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅛	.06¼	.06¼	.06¼	.06⅜	.07	.07⅛	.07⅝
11½	.10	.09⅝	.09⅜	.09¼	.09	.08⅝	.08⅜	.08⅛	.07½	.07⅛	.06⅝	.06⅛	.06	.06⅛	.06	.06	.06	.06	.06	.05⅝	.05⅝	.05½	.05¼	.05⅝	.06	.06⅛	.06⅝
11⅛	.10½	.09	.09⅝	.09⅛	.09¼	.09	.08⅝	.08⅛	.08¼	.07⅛	.06⅝	.06⅛	.06¼	.06¼	.06¼	.06⅛	.06⅝	.06⅝	.06¼	.06¼	.06⅛	.06	.06	.06⅜	.06⅝	.07	.07⅛
13⅜	.13	.13	.13	.12⅝	.12	.11⅛	.11¼	.10	.10⅛	.10	.09⅛	.09¼	.08⅝	.08⅝	.08⅝	.08⅝	.08⅝	.08⅝	.08⅝	.08⅛	.08	.08	.08	.08	.08⅝	.08⅝	.09
13⅛	.13	.13	.13	.12⅝	.12	.12⅛	.11⅝	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.10⅛	.10	.09½	.09½	.09⅛	.08⅝	.08⅝	.08⅝	.08⅝
14⅛	.14⅛	.13⅜	.13⅝	.13¼	.13	.12½	.12	.12⅛	.12¼	.12	.12	.12	.12	.12	.12	.12	.11⅝	.11⅝	.11⅛	.10⅝	.10¼	.10¼	.10¼	.10	.09⅝	.09⅝	.09⅝
15⅛	.15⅛	.14⅛	.14⅝	.14⅜	.14	.13½	.13	.13¼	.13	.12⅝	.12⅝	.12⅝	.12⅝	.12⅛	.12¼	.12¼	.12¼	.12¼	.12	.11⅜	.10⅝	.10⅝	.10⅝	.10½	.10	.10	.10
17⅛	.17⅛	.17⅛	.17¼	.17¼	.16⅝	.16⅛	.16¼	.15½	.15⅛	.15⅛	.15⅛	.15⅛	.15⅛	.14⅝	.15	.15	.15	.14⅝	.14⅝	.14	.13	.13	.13	.12¼	.13	.13	.13
21½	21½	.20⅝	.20½	.20½	.20¼	.20	.19⅝	.19½	.19	.19	.19	.19	.18⅝	.18¼	.18¼	.18¼	.18¼	.18¼	.18	.17⅝	.17	.17	.17	.16	.16	.16	.16
.09⅛	.08⅛	.08⅛	.08¼	.08	.07	.06⅛	.06¼	.06¼	.06¼	.06⅛	.06⅜	.07	.07¼	.07⅛	.07⅛	.07⅜	.07⅜	.07⅜	.08	.07	.06⅝	.06¼	.06⅛	.05½	.05½	.05⅝	.06
.07	.08	.08	.07⅛	.07¼	.06⅜	.06¼	.06	.06	.06	.06¼	.06⅛	.06⅜	.07	.07	.07	.07½	.07⅜	.07⅜	.07⅜	.06⅜	.06¼	.06	.05⅝	.05¼	.05¼	.05	.05⅛
.08	.07	.07	.06⅜	.06⅛	.06	.05⅝	.05¼	.06⅛	.06¼	.05⅝	.06	.06⅜	.07	.07	.07	.07½	.07⅜	.07⅛	.07⅛	.06⅛	.06	.05⅝	.05⅝	.05	.05	.04½	.05
.08	.09⅛	.08⅛	.08⅛	.07⅛	.07	.06⅛	.06¼	.06	.06¼	.06¼	.06⅛	.07	.07¼	.07¼	.07¼	.07	.07⅛	.07⅛	.07⅛	.07	.06¼	.06	.05⅝	.05¼	.05¼	.04¾	.05⅜
.07⅛	.07	.07⅛	.08	.07	.06	.06	.06	.05⅝	.05⅝	.06	.06¼	.06⅛	.07	.07	.07	.07	.07¼	.07⅛	.07⅛	.06⅜	.06⅝	.05⅝	.05⅛	.04⅝	.04⅝	.04⅝	.05
.09⅛	.09	.08⅝	.08⅛	.08⅛	.08⅛	.08	.07⅝	.07⅝	.07⅝	.07	.06⅝	.06⅛	.06	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06	.06	.05⅝	.05⅝	.05⅝	.06	.06⅛	.06⅛
.08⅛	.09	.08⅝	.08½	.08½	.08¼	.08	.07⅝	.07⅝	.07⅛	.07	.06⅝	.06⅜	.06	.06⅛	.06⅝	.06⅜	.06⅜	.06⅜	.06⅜	.06½	.06¼	.06	.05⅝	.05⅝	.06¼	.06½	.06⅝
.03⅝	.03⅝	.03¼	.03⅛	.03¼	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.04	.04	.04	.04¼	.04¼	.04⅛	.04⅛	.04⅛	.04⅛	.04⅛
.04	.04	.04	.04	.04	.04	.03⅝	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04¼	.04¼	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝
.04⅛	.04⅛	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04¼	.04⅛	.04⅛	.04⅛	.04⅛	.04⅛	.04⅛	.04⅛	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝
.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅝	.03⅝	.03⅛	.03⅜	.02⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.04¼	.04¼	.04¼	.04⅛	.04¼	.04¼
.06	.06	.06	.06	.05⅝	.05⅝	.05½	.05⅝	.05⅝	.05⅝	.05⅝	.05⅝	.05⅝	.05⅝	.06	.06	.06⅛	.06⅜	.07	.07	.07	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝
.06⅛	.06⅛	.06	.06	.06	.06	.05⅝	.05⅝	.05⅝	.05⅝	.05⅝	.06	.06	.06	.06⅛	.06½	.07	.07¼	.07¼	.07¼	.07	.07	.07	.07	.07	.07	.07	.07
.85	.75	.70	.70	.70	.75	.80	.90	.85	.85	.85	.90	.85	.75	.75	.80	.80	.75	.70	.70	.72½	.65	.60	.60	.62½	.62½	.65	.70
1.10	1.05	1.00	1.00	1.00	1.00	1.05	1.10	1.15	1.15	1.15	1.10	1.05	1.00	1.10	1.00	.100	.100	1.00	1.00	1.00	.85	.85	.85	.85	.90	.90	.95
.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.02⅝	.02⅝	.02⅝	.03	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛	.02⅝	.02½	.02⅛	.03⅛	.03⅛	.03⅛	.03⅛	.03⅛
1.00	1.00	.95	.90	.90	.90	.87½	.87½	.90	.95½	.95	.95	.90	.82½	.82½	.82½	.82½	.80	.80	.80	.77½	.70	.70	.70	.70	.75	.75	.80
.02⅝	.02⅝	.02½	.02½	.02½	.02⅝	.02⅝	.02⅝	.02⅝	.02½	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02¼	.02⅜	.02⅝	.02⅝	.02⅜	.02¼	.02¼	.02¼	.02¼	.02¼	.02⅝	.02⅝	.02½
.03	.02	.02⅛	.02⅜	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.03⅛	.03	.03	.03	.03	.03	.03	.03	.03	.02	.03	.03
.85	.85	.85	.85	.80	.80	.80	.85	.85	.85	.90	.85	.85	.75	.82½	.82½	.82½	.70	.65	.65	.60	.60	.60	.60	.60	.70	.75	.75
.02⅝	.02⅝	.02½	.02½	.02½	.02¼	.02¼	.02⅝	.02⅝	.02⅝	.02⅝	.02½	.02¼	.02¼	.02⅝	.02⅝	.02¼	.02¼	.02¼	.02⅝	.02¼	.02¼	.02¼	.02¼	.02¼	.02½	.02¼	.02⅝
.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.03⅛	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.03¼	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.03	.03	.03
.95	.95	.95	.90	.85	.85	.90	.90	.95	.90	.85	.85	.85	.80	.80	.80	.75	.75	.70	.70	.70	.65	.65	.65	.70	.70	.70	.70
.04⅝	.04⅝	.04⅝	.04⅝	.03⅝	.03¼	.03½	.03⅜	.03½	.03⅜	.03½	.03⅜	.03½	.03¼	.03¼	.03¼	.03½	.03⅜	.03	.03	.03	.03	.02⅝	.02⅝	.02⅝	.02⅝	.03⅛	.03⅛
1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.35	1.35	1.35	1.35	1.30	1.20	1.20	1.20	1.20	1.20	1.15	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.15	1.15
.04⅝	.04⅜	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.05	.05⅛	.05½	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.04⅝	.04⅝	.04⅝	.04⅝
.05⅛	.05⅛	.05⅛	.05⅛	.05	.05	.04⅝	.04⅝	.04⅝	.04⅝	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅝	.05⅝	.05⅝	.05⅝	.05⅝	.05⅛	.05⅛	.05⅛	.05	.05	.05	.05
.07⅛	.07⅛	.07⅛	.07⅛	.07⅛	.06⅛	.07	.07	.07	.07	.07	.07	.07	.07⅛	.07⅛	.07⅛	.08	.08	.08	.08	.08	.08	.08	.08	.08	.08	.07⅛	.07⅛
.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.06⅝	.05	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝	.04⅝
.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.14	.14	.14	.14	.14	.14	.13⅝	.12	.12	.12	.12	.12	.12	.12
.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.15	.15	.15	.15	.15	.15	.14⅝	.13	.13	.13	.13	.13	.13	.13
.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.12½	.12⅝	.12½	.12½	.12½	.12½	.12¼	.10⅝	.10½	.10½	.10⅝	.10⅝	.10⅝	.10⅝
.11⅛	.11⅛	.11⅛	.11⅛	.11⅛	.11⅛	.11⅛	.11⅛	.11⅛	.11⅛	.11⅛	.11⅛	.11⅛	.11⅛	.13½	.13⅝	.13⅝	.13⅝	.13⅝	.13¼	.11⅝	.11⅝	.11⅝	.11⅝	.11⅝	.11⅝	.11⅝	.11⅝
.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.15⅝	.15⅝	.15⅝	.15⅝	.15⅝	.15¼	.13½	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛
.27	.27	.27	.27	.27	.27	.27	.27	.27	.27	.27	.27	.27	.27	.28	.28	.28	.28	.28	.25	.23	.23	.23	.23	.23	.23	.23	.23
.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.02⅝	.03
.32	.29	.29	.29	.30	.30	.29	.29	.28½	.28	.27	.26½	.26½	.26¼	.26	.26	.26	.26	.26	.25⅝	.25	.25	.25	.25	.26	.26	.27	.27¼
.17⅛	.13½	.13	.13	.16⅛	.16⅛	.15	.15⅛	.15⅛	.15⅛	.15⅛	.15⅛	.15⅛	.15¼	.15⅝	.16	.16	.16	.16	.16	.16	.16⅛	.17	.17	.17	.17	.18	.18⅛
.36⅛	.17⅛	.17⅛	.17⅛	.33⅛	.33⅛	.33	.33	.33	.33	.32	.32	.32	.32	.32	.31⅛	.31⅛	.31⅛	.31⅛	.31⅛	.31⅛	.31⅛	.31⅛	.31⅛	.31⅛	.31⅛	.31⅛	.31⅛
.11	.11	.10⅛	.10⅛	.10⅛	.10⅛	.10⅛	.10⅛	.10⅛	.10⅛	.10⅛	.10⅛	.10⅛	.10⅛	.10	.10	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11	.11⅛	.11⅛
.09⅛	.09⅛	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.09	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
.13⅛	.13	.12	.12	.12	.12	.12	.12	.12	.10⅛	.10⅛	.10⅛	.10⅛	.10⅛	.10⅛	.10⅛	.10⅛	.08⅛	.09⅛	.09⅛	.09⅛	.09⅛	.09⅛	.09⅛	.09⅛	.09⅛	.09⅛	.09⅛
.40⅛	.40⅛	.40⅛	.40⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.37⅛	.36⅛	.36⅛	.36⅛	.36⅛	.36⅛	.36⅛	.36⅛	.36⅛	.36⅛	.36⅛	.36⅛	.36⅛	.37⅛
.47⅛	.47⅛	.47⅛	.47⅛	.44⅛	.44⅛	.44⅛	.44⅛	.44⅛	.44⅛	.44⅛	.44⅛	.44⅛	.44⅛	.44⅛	.44	.44	.44	.44	.44	.44	.44	.44	.44	.44	.44	.44	.44
.24⅛	.24⅛	.24⅛	.24½	.24⅛	.24⅛	.24⅛	.24⅛	.24⅛	.24⅛	.24⅛	.24⅛	.24⅛	.24⅛	.24⅛	.84⅛	.84⅛	.32⅛	.32⅛	.32⅛	.32⅛	.32⅛	.32⅛	.32⅛	.32⅛	.32⅛	.32⅛	.32⅛
1.70	1.70	1.70	1.70	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.45	.845	1.45	1.45	1.45	1.45	1.45	1.35	1.35	1.35	1.35	1.35
.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04½	.04	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03⅝	.03½	.03½	.03½	.03¼
.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.03¼	.02¼	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.03⅜	.04
.65	.28.65	.28.65	.28.65	.27.15	.27.15	.27.15	.27.15	.27.15	.27.15	.27.15	.26.15	.26.15	.26.15	.26.15	.26.65	.26.65	.26.65	.25.15	.25.15	.25.15	.24.15	.24.15	.24.15	.24.15	.24.4	.24.4	.24.4
	.15	.15	.15	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12	.12	.11.5	.11½	.11⅛	.11⅛	.11⅛	.10⅛	.10⅛	.10.5	.10.5	.10.5	.10.5	.10.5
.17⅛	.17⅛	.17⅛	.17⅛	.14⅛	.14⅛	.14⅛	.14⅛	.14⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13	.12.5	.12⅝	.12⅝	.12⅝	.12	.12	.12	.12	.12	.12	.12
.06	.06	.06	.06	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.05⅛	.06	.07	.07	.07	.07	.07	.07	.07	.07	.07
.13	.13	.13	.12½	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.12⅛	.13	.14	.14	.14	.14	.14	.14	.14	.14	.14	.14
.15⅛	.15⅛	.15⅛	.15⅛	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.9	15.9	15.9	15.9	15.9	15.9	17.15	17.15	17.15	17.15
.06	.07	.07	.06½	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.06⅛	.07	.08	.08	.08	.08	.08	.08	.08	.07	.07
.14	.14	.14	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.13⅛	.14	.15	.15	.15	.15	.15	.15	.15	.15	.15
16.9	16.9	16.9	.16⅛	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.9	17.9	17.9	17.9	17.9	17.9	18.15	18.15	18.5	18.5

Why Gasoline Prices Vary Across U.S.

Depends on Population, Market for Products, Cost of Transportation and Local Taxation Rates. Facts and Figures Offered in Evidence

By C. O. Willson

"Why do gasoline prices vary throughout the United States?"

This is a question often heard from consumers. Likewise Federal and State investigators seem to be more concerned about this one fact of varying prices than any other phase of the oil business.

For some unknown reason there apparently exists in the mind of a considerable part of the consuming public a belief that gasoline prices to them should be uniform in all parts of the United States. This attitude was briefly expressed by a well-known newspaper syndicate writer who said "there is no valid reason why gasoline prices in one State should be more or less than in another."

Likewise tourists crossing a State line are wont to protest when they find gasoline prices 1 to 4 cents higher and point to that fact as concrete evidence of price manipulation.

In the first place, these complainants overlook the fact that 35 States have gasoline taxes which vary from 1 to 4 cents while 13 States do not have taxes at the present time. These taxes are always added to the wholesale and retail prices of gasoline. It is apparent that the difference in these tax rates, the full effect of which are explained elsewhere in this issue, would in itself necessitate varying prices.

Aside from this situation in regard to taxes, gasoline prices have always varied at different points in the United States and, barring a change in the fundamental factors entering the production of gasoline and other refined products, always will. Starting back with the several costs which enter into the production of a barrel of crude oil, its varying values based on its innate characteristics, following the same barrel of oil through the pipe lines, the refineries and the distributing facilities, probably a thousand reasons could be advanced in explanation of the lack of uniformity in gasoline prices.

It will be found that these detailed explanations, traced back to their origin, are concerned with fundamental conditions over which the industry has little or no control, having to do with geographic distribution of raw material, manufacturing centers and the consumption of the products. It is apparent that in the petroleum world, the industry itself, the Government or no other agency can change two of these factors. The drilling of 11,433 dry holes in 1922 and

AVERAGE PRICES ON REFINED PRODUCTS

	Av. Price 1st 6 mos. of year	Av. Price 2d 6 mos. of year	Av. Price for the year
Gasoline and Naphtha, Oklahoma (Group 3)—			
50-52, 450 end point	$0.11.64	$0.06.82	$0.09.23
56-58, 450 end point	.11.78	.06 99	.09.39
58-60, 437 (New Navy)	.12.32	.07.26	.09.78
60-62, 400	.13.88	.08.80	.11.34
64-66, 375	.14.93	.09.84	.12.38
68-70, 350-365	.16.03	.11.17	.17.60
Kansas—			
58-60, 437 (New Navy)	.12.59	.07.51	.10.00
North Texas—			
50-52, 456	.11.59	.06.85	.09.22
58-60, 437	.12.23	.07.16	.09.65
64-66, 390	.14.61	.09.47	.12.04
Pennsylvania—			
52 naphtha	.14.61	.10.58	.12.57
58 gasoline	.15.53	.11.51	.13.52
60 gasoline	.16.43	.12 81	.14.30
64 gasoline	.18.83	.14.81	.16.83
68-70 gasoline	.22.54	.14.28	.20.41
Natural Gasoline—			
Grade A, 72-78 under 375 e. p., rec. 90%	.11.44	.06.82	.09.13
Grade B, 76-82, 375 e. p., rec. 85%	.11.01	.06.48	.08.75
Grade C, 80-88, 350 e. p., rec. 78%	.10.32	.06.16	.08.23
North Texas—			
72-76 absorption	.11.00	.06.71	.08.85
80-84 compression	.10.38	.06.20	.08.29
Motor Natural Gasoline (Blend), Oklahoma—			
60-62, 450 end point	.11.34	.06.69	.09.01
68-70, 430-435 end point	.11.42	.06.86	.09.16
Burning Oil, Oklahoma—			
41-43 water white kerosene	.04.12	.03.93	.04.00
42-43 water white kerosene	.04.33	.04.15	.04.24
Kansas—			
41-43 water white kerosene	.04.40	.04.32	.04.36
North Texas—			
41-43 water white kerosene	.03.92	.03.81	.03 86
Pennsylvania—			
43 kerosene prime white	.06.80	.06.24	.06.52
45 kerosene water white	.07.17	.06.51	.06.84
Fuel Oils—			
20-22 (El Dorado)	.84.80	.74.30	.79.55
Kansas—			
24-26 fuel oil	1.09.20	1.00.00	1.04.06
36-38 distillate	.03.38	.03.10	.03.24
Oklahoma—			
24-26 fuel oil	1.03.68	.86.54	.95 11
32-36 gas oil	.02.98	.02.35	.02.66
38-40 straw distillate	.03.32	.02.78	.03.05
North Texas—			
24-26 fuel oil	1.00.60	.77.30	.87.95
32-36 gas oil	.02.74	.02.36	.02.55
38-40 straw distillate	.03.03	.02.82	.02.96
North Louisiana—			
Fuel oil	1.06.00	.77.11	.92 10
Gulf Coast—			
Gas oil	.04.67	.03.33	.04.00
Fuel oil	1.54.93	1.23.00	1.36.96
Pennsylvania—			
30°-34° fuel oil, gal.	.05.70	.04.98	.05.40
36°-40° fuel oil, gal.	.05.94	.05.25	.05.60
34° neutral, gal.	.08.69	.07.50	.08.09
Neutral Oils, Oklahoma—			
100 vis., 3 color, 20-25 cold test	.06.67	.05.26	.06.06
180 vis., 3 color, 23-28 cold test	.12.21	.12.77	.12.49
200 vis., 3 color, 23-28 cold test	.12.80	.13.55	.13.17
180 vis., 5 color, 23-28 cold test	.10.80	.11.27	.11.03
200 vis., 5 color, 23-28 cold test	.11.54	.12.05	.11.75
240 vis., 5 color, 25-30 cold test	.13.30	.14.05	.13.67
590-600 bright stock	.26.80	.24.04	.26 42
124-126 white crude scale wax	.02.42	.02.65	.02.54
Pennsylvania—			
200, 3 color	.30.50	.27.03	.28.77
600 Pennsylvania flash	.19.22	.16.34	.17.80
Pendsylvania bright stock	.25.83	.30.92	.33.37
Gulf Coast—			
No. 3 color, 200 vis., pale oil	.12.25	.10.70	.11.47
No. 5 color, 200 vis., red	.10 18	.09.40	.09.79
New York Domestic Market—			
Gasoline, bulk delivered at New York	.17.26	.10.51	.13.88
Cylinder, extra light filtered	.39.21	.37.34	.38.23
Cylinder, bright stock	.46.56	.44.52	.45.52
Paraffin, 903 specific gravity	.24.16	.23.42	.23.89
Bunker oil, 14 plus delivered in barges, bbl.	1.62.20	1.51.60	1.56.90
Diesel oil at refinery, gal.	.04.46	.04 10	.04.28
120-122 a.m.p. wax	.03.17	.03.34	.03.25
New York Export Market—			
Motor gasoline in cases, gal.	.28.99	.25.83	.27 41
Motor gasoline, U. S. Navy	.15.68	.12.06	.13.87
Naphtha, 60° p. 59-61 spec. grav.	.18 18	.13.30	.15.74
Standard white kerosene in bulk, gal.	.06.66	.06.08	.06.36
Standard white in barrels, gal.	.13.14	.13.08	.13.12
Standard white in cases	.16 14	.15.19	.16.06
Water white in bulk	.07.54	.07.00	.07.27
Water white in barrels	.14.22	.14.08	.14.15
Water white in cases	.17.22	.17.06	.17.14

SUPPLY AND DEMAND BY STATES

Thirty-one States do not produce crude oil.

Ten additional States do not produce enough crude oil to meet their own gasoline requirements.

Twenty-one States do not have refineries.

Fifteen additional States do not refine enough crude to supply their own gasoline requirements.

Three States have 74.4 per cent of the crude production. These same States have only 13.7 per cent of the gasoline consumption.

Ten States have 56.1 per cent of the gasoline consumption. Eight of these States do not produce enough crude or refine sufficient gasoline to meet their own requirements.

DISTRIBUTION OF RAW MATERIAL, MANUFACTURING OUTPUT AND OIL CONSUMPTION IN OIL INDUSTRY

State—	Crude Produced— Amount	Pct.	Crude Refined— Amount	Pct.	Gaso. Consumed Amount	Pct.
Alabama	None	.0	None	.0	1,321,270	.3
Arizona	None	.0	None	.0	438,635	.2
Arkansas	38,647,863	5.2	4,844,270	.9	1,170,102	.7
California	263,728,895	34.3	150,205,980	27.9	11,476,768	8.2
Colorado	62,500	.08	484,427	.09	1,983,730	1.2
Connecticut	None	.0	None	.0	1,864,039	1.1
Delaware	None	.0	None	.0	314,071	.1
District of Columbia	None	.0	None	.0	1,080,839	.6
Florida	None	.0	None	.0	1,533,333	.9
Georgia	None	.0	None	.17	1,820,699	1.2
Idaho	None	.0	None	.0	653,494	.4
Illinois	8,726,000	1.28	15,171,240	2.8	10,154,896	6.3
Indiana	1,042,500	.14	13,170,635	2.4	6,111,202	3.8
Iowa	None	.0	None	.0	6,033,455	3.7
Kansas	29,812,123	4.	23,683,100	4.4	3,937,175	2.3
Kentucky	8,077,000	1.27	3,334,338	.6	2,077,921	1.3
Louisiana	24,708,993	3,27	27,450,866	5.1	1,450,952	.9
Maine	None	.0	None	.0	1,137,809	.7
Maryland	None	.0	10,136,792	1.9	2,199,351	1.3
Massachusetts	None	.0	8,452,563	1.5	4,988,238	3.1
Michigan	None	.0	None	.0	7,654,512	4.8
Minnesota	None	.0	None	.0	4,695,290	2.9
Mississippi	None	.0	None	.0	1,093,714	.9
Missouri	None	.0	3,501,055	.6	4,990,486	3.1
Montana	2,677,717	.36	968,854	.18	773,436	.4
Nebraska	None	.0	350,105	.06	786,746	1.8
New Hampshire	None	.0	None	.0	624,077	.4
Nevada	None	.0	None	.0	164,476	.09
New Jersey	None	.0	54,849,870	10.2	4,514,798	2.8
New Mexico	None	.0	None	.0	327,245	.2
New York	1,250,000	.16	8,452,547	1.5	12,724,821	7.9
North Carolina	None	.0	None	.0	2,594,031	1.6
North Dakota	None	.0	None	.0	1,144,460	.7
Ohio	7,086,000	.97	10,836,000	2.	11,195,905	7.1
Oklahoma	165,013,685	22.3	46,289,697	8.6	3,216,190	2.0
Oregon	None	.0	None	.0	1,743,364	1.1
Pennsylvania	7,285,000	.98	28,175,161	5.2	11,153,204	7.0
Rhode Island	None	.0	3,667,772	.6	924,548	.6
South Carolina	None	.0	2,334,037	.4	1,347,810	.8
South Dakota	None	.0	None	.9	1,380,972	.9
Tennessee	7,500	.01	116,701	.02	1,816,205	1.2
Texas	132,331,898	17.8	150,205,980	16.8	7,217,037	4.5
Utah	None	.0	1,130,329	.21	691,690	.4
Vermont	None	.0	None	.0	552,801	.3
Virginia	None	.0	None	.0	2,295,250	1.4
Washington	None	.0	None	.0	2,736,632	1.7
West Virginia	None	.88	2,167,220	.4	1,690,144	1.1
Wisconsin	None	.0	None	.0	4,790,696	3.0
Wyoming	42,386,863	5.6	25,846,209	4.8	417,276	.2

A jarrin' job is bad enough but a strippin' job is worse

When your well caves in freezing the drill pipe, and a "pullin' job" is necessary, then comes a real test for both men and couplings.

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The terrific smash of the sinker-bar soon finds the weak spot in the line—and unless the couplings are as strong as the drill pipe you are up against a "strippin' job"—the bane of every operator and drill crew.

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904

TAXES ON GASOLINE WILL ADD MUCH TO COST TO CONSUMERS THIS YEAR

By C. O. Willson

Gasoline consumers in the United States through the action of their State Legislatures will add $75,854,470 to their gasoline bill for 1924. With taxes which vary from 1 to 4 cents with an average of 2 cents, 35 States have direct taxes on all gasoline consumed within their boundaries.

This $75,854,470 estimate undoubtedly represents a minimum cost. Several States which have no gasoline taxes at the present time are practically certain to pass laws providing for them within the next few months. In addition several States which have a tax are planning to increase the rate per gallon. In this connection it is worthy to note that while 35 States already have these taxes the remaining 13 are more important from the standpoint of gasoline consumption.

It is estimated the 35 States will consume 3,310,126,313 gallons of gasoline during 1924, but this is only 40 per cent of the total estimated for the entire United States. Up to the present time, with the exception of California, Pennsylvania and Texas, the main gasoline consuming States have not passed laws providing for a gasoline tax. However, strong pressure is being brought to bear in these States, including Ohio, Illinois, New York and Michigan and it is commonly conceded in oil circles that before the end of the year there will be probably not more than half a dozen States which will not have a tax. In several States which have a tax, bills have been introduced providing for increases. There is no way at this time definitely determining just how many States will add to their present taxes, but those in close touch with the situation state that a majority of the 1-cent tax rates will be increased to 2 and 3 cents.

Twelve States have a 1-cent tax; fourteen a 2-cent tax, one a 2.5-cent tax, seven a 3-cent tax and one a 4-cent tax. A year ago only 18 States had gasoline taxes and all were 1-cent with the exception of three States where the rate was 2 cents. This comparison not only shows the increase in the number of States but also the tendency toward higher rates. Bills have been introduced in State Legislatures for taxes as high as 5 cents.

Representatives of the oil industry who have appeared before legislative committees in States which do not have gasoline taxes at the present time, are authority for the statement that the argument now most commonly presented is that a majority of the States actually have the tax in effect. In those States where an attempt is being made to increase the tax, the proponents of the measure point to adjoining or nearby States where the tax is higher. It is apparent that the inevitable development of this situation is constantly higher tax rates.

The estimates for gasoline consumption in the States for 1924 were based on the official automobile registration figures for 1923 and the Bureau of Mines reports for 1923 covering gasoline consumption. From this datum an average daily gasoline consumption per registered car was obtained. A 20 per cent increase over 1923 was estimated for the 1924 gasoline consumption. This is a conservative estimate as to the 1924 increase as is indicated by the fact that the total increase of 1923 over 1922 was 26.4 per cent.

It will be noted that the estimate as to the cost to the consumers is confined to the State gasoline taxes. It does not include city taxes such as are in effect at Kansas City, St. Louis, Birmingham and other points. Neither does it cover the inspection taxes which are levied in practically every State.

Table showing estimated cost of gasoline taxes to consumers in the United States in 1924 based on taxes which were in effect January 1, 1924.

State	Estimated 1924 Gasoline Consumption	Tax	Total Cost
Alabama	66,592,485	2c	$ 1,331,849
Arizona	22,107,214	3	663,216
Arkansas	58,973,152	4	2,358,926
California	578,429,084	2	11,568,581
Colorado	99,979,968	2	1,999,599
Connecticut	93,947,568	1	939,475
Delaware	15,829,176	2	316,583
Florida	77,280,000	3	2,318,400
Georgia	91,763,232	3	2,752,896
Idaho	32,936,112	2	658,722
Indiana	308,004,570	2	6,160,091
Kentucky	104,727,216	1	1,047,272
Louisiana	73,128,000	1	731,280
Maine	57,345,552	1	573,455
Maryland	110,847,264	2	2,216,945
Mississippi	55,123,200	1	551,233
Montana	38,981,184	2	779,623
Nevada	8,289,600	2	165,792
New Hampshire	31,453,488	1	314,534
New Mexico	16,493,136	1	164,931
North Carolina	130,739,146	3	3,923,174
North Dakota	57,680,832	1	576,808
Oklahoma	162,096,000	1	1,620,960
Oregon	87,865,536	3	2,635,966
Pennsylvania	562,121,472	2	11,242,429
South Carolina	67,929,600	3	2,037,888
South Dakota	69,600,000	2	1,392,000
Tennessee	91,536,720	2	1,830,734
Texas	363,738,672	1	3,637,386
Utah	34,861,200	2.5	871,530
Vermont	28,025,728	1	280,257
Virginia	120,500,600	3	3,615,018
Washington	137,926,272	2	2,654,525
West Virginia	85,636,848	2	1,712,736
Wyoming	21,030,768	1	210,307
Total	3,310,126,313	*1.99c	75,854,470

*Average for the 35 States.

1923 and the thousands which had been drilled in previous years are indisputable evidence that crude oil production is confined to comparatively small and widely scattered areas. The other factor, which it is equally as obvious that the industry cannot control, is consumption. Gasoline has a very close relationship to population and its sales distribution therefore is dependent on the density of the latter.

Location of Plants

The third factor — manufacturing output or refining output as it is known in the industry — is more flexible. In an ideal situation, no doubt, as outsiders have pointed out, the refineries would be distributed so as to take a maximum advantage of all transportation costs. This would mean that the plants would be located in the consuming centers and connected with pipe lines or some other form of comparatively cheap transportation. It is apparent from the accompanying table this desired situation has in part been accomplished. A large amount of crude oil is transported by pipe line and water from the crude producing centers to refineries which are located nearer the center of consumption. It is agreed, however, that this involves an expenditure which only the largest and strongest companies can finance. Crude producing and consuming centers are constantly shifting and this also serves to deter individual oil concerns from making large expenditures connecting new fields with refineries located within the maximum consuming centers.

There are other conditions which further complicate this situation. One has to do with the sale of refined products other than gasoline. The distribution of fuel oil, gas oil, kerosene and lubricating oil consumption is not the same as gasoline. Refineries located in the center of a large gasoline consuming area might be far distant from a ready market for other products.

Market for Output

Often times a refinery organization is able to dispose of a substantial part or all of its output, except gasoline, near its plant. The price received for these products enables it to dispose of gasoline in competition with plants more favorably located in regard to gasoline consumption. For instance, in the Mid-Continent Field refineries located hundreds of miles from the main gasoline consuming area have a very satisfactory outlet for their fuel oil output in the railroads and industries operating in the Southwest. This situation will be found in several other refining centers. It is apparent from these facts that the matter of refinery location is a far more complicated problem than is generally recognized. Plant location is a problem of every major industry and in the oil world, as in others, the inevitable working of an economic law can be trusted to continue gradually to work out a distribution which makes for maximum efficiency. If the present free competition is permitted to continue, plants will be located wherever conditions justify in the opinion of owners with due regard to a permanent crude supply, market conditions on all products and the financial strength of the company concerned.

The accompanying tables were prepared to show at a glance how impossible is the contention that gasoline prices should be the same throughout the United States and how in fact such uniformity would in itself be indisputable evidence of the price manipulation to which the best interests of the industry as well as of the consuming public are opposed.

Transportation Enters

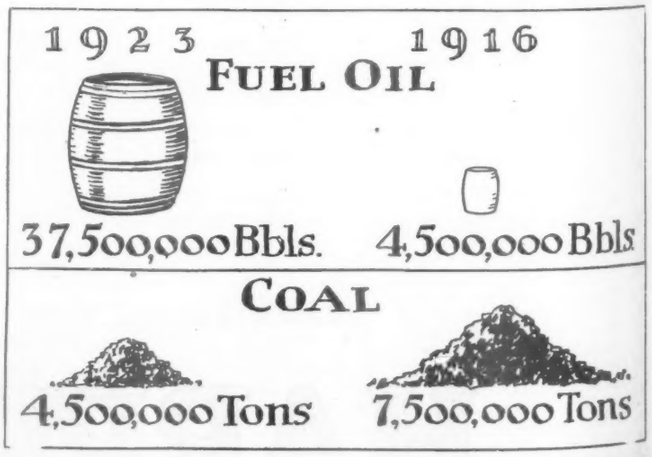
The table shows that 41 States either do not produce crude oil or do not produce large enough quantities to supply their own gasoline requirements. Likewise, 36 States do not refine enough crude to obtain their own gasoline. It is evident from this situation that the great bulk of petroleum commodities are not consumed in the States from which the crude production is produced or refined.

Thus transportation enters as a very direct factor into the cost of refined products. Individual units of the oil industry have endeavored to establish uniform prices for gasoline and other products in small areas. This is in line with the general merchandising policies which govern the sale of all important commodities.

The widespread competition in the sale of refined products assures that any price difference will be based on the fundamental conditions which have just been pointed out. On a few occasions, for short periods, attempts have been made to maintain prices out of line with the surrounding sections. This discrepancy has always been adjusted, however, due to the outside competition always on the lookout for a more favorable market. Elsewhere in this issue will be found a table giving the retail prices of other commodities and showing how well the oil industry has succeeded in giving the consuming public uniform prices.

The accompanying table is based on official reports for 1923. The crude productions covers that of all States for the year. The crude refined was derived from reports of the Bureau of Mines. The gasoline consumption was derived from the total domestic consumption figures for 1923 of the Bureau of Mines and official automobile registrations for the same period.

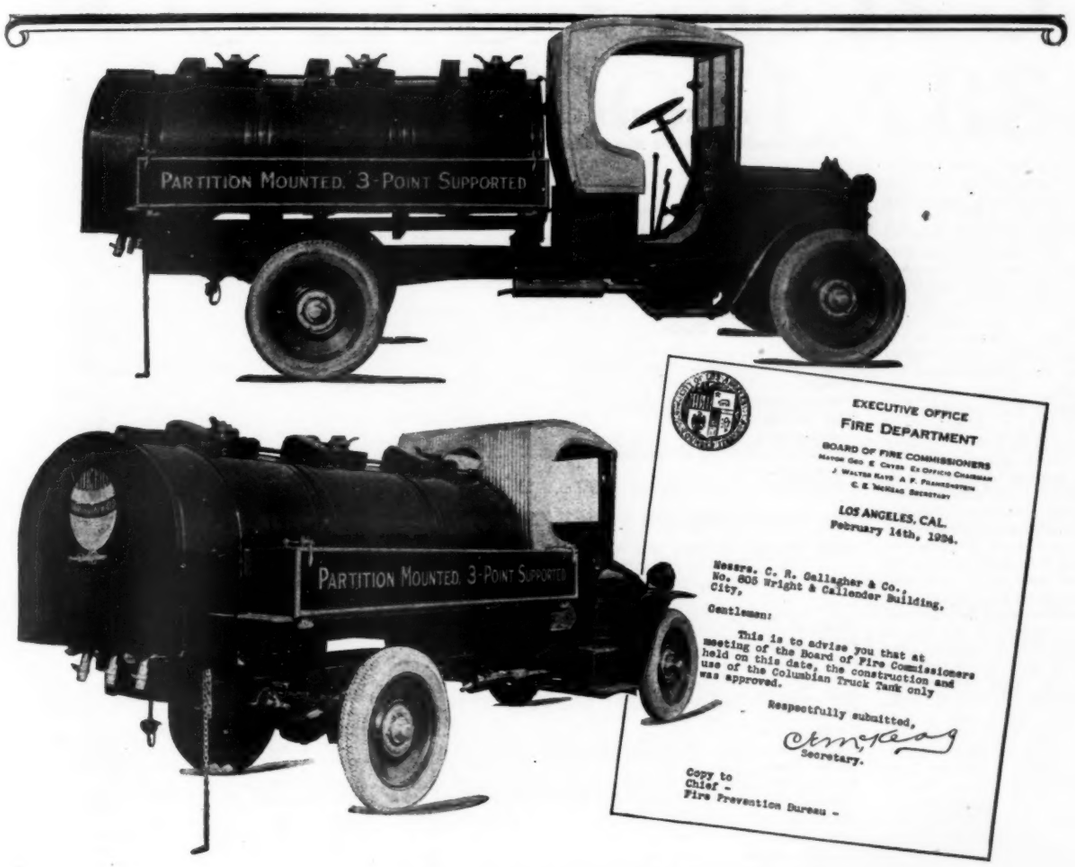
FUEL OIL FOR SHIPS' BUNKERS MAKING BIG GAIN OVER COAL



Bunker fuel oil laden on vessels engaged in foreign trade as reported by the Bureau of Foreign and Domestic Commerce increased from 4,500,000 barrels, valued at $4,000 000 in 1916, to 37,500,000 barrels, valued at $52,000,000, in 1923.

Bunker coal laden on vessels engaged in foreign trade as reported by the same authority decreased from 7,500,000 tons, valued at $26,000,000 in 1916 to 4,500,000 tons, valued at $32,000,000, in 1923.

The figures for 1916 are for the fiscal year ended June 30, upon which basis the bureau reported prior to 1918; the figures for 1923 are for the calender year.


PARTITION MOUNTED. 3-POINT SUPPORTED
PARTITION MOUNTED. 3-POINT SUPPORTED
EXECUTIVE OFFICE
FIRE DEPARTMENT
BOARD OF FIRE COMMISSIONERS
LOS ANGELES, CAL.
February 14th, 1924.
Messrs. C. R. Gallagher & Co.,
No. 805 Wright & Callender Building,
City,
Gentlemen:
This is to advise you that at meeting of the Board of Fire Commissioners held on this date, the construction and use of the Columbian Truck Tank only was approved.
Respectfully submitted,
Secretary.
Copy to
Chief -
Fire Prevention Bureau -

Trade COLUMBIAN TANKS FOR THE WORLD Mark

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- Oil Field Tanks
- Bulk Station Tanks
- Underground Tanks
- Floating Tank Decks
- Barrels, Buckets
- Carrying Cans, Funnels
- Faucets, Valves
- Oil and Gasoline Pumps
- Plates, Sheets, Angles

FIRE regulations on truck tanks in Los Angeles are probably the most stringent in force. Ordinance No. 46,729, August 8, 1923, threatened to put tank trucks off the streets. But—

A Columbian (Fire Department Model) truck tank was submitted to the Board of Fire Commissioners. Two views of this model are shown above. Also is shown a reproduction of the Board's letter to our Pacific Coast distributor. It approves Columbian construction and use. Tank trucks can now lawfully operate in Los Angeles. Columbian Truck Tanks comply with all regulations.

These famous Columbian features are a part of the Fire Department Model: Partition Mounted, 3-point Supported; jointless pipe lines sloped to the rear; funnel outlets; welded-on bucket box with removable bottom; removable side carrying racks; vented dome plugs; faucets operating in the bucket box. In fact, tank, mounting pipe lines and bucket box are welded into a one piece unit.

In addition it has internal safety valves, automatically controlled. Control system is of the Selective type, opening any one valve selected, or the Master type, opening all valves simultaneously. Control head located in bucket box. The closing of the bucket box door closes all internal valves. Fusible link closes them in the fire emergency.

Fire Department Models will be on display at the St. Louis and Chicago conventions. In the meantime full details await your request.

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Partition Mounted-3 Point Supported
TRUCK TANKS

Gasoline Prices Follow Price of Crude

Changes in 43 Cities and All the Producing Fields During 1923 Show Clearly the General Effects of Equalizing Causes

By C. O. Willson

Do gasoline prices change with advances or reductions in the posted prices of crude oils?

Are crude and gasoline price changes approximately the same in all the producing fields and the gasoline consuming centers?

Both these questions are often answered in the negative. In regard to the first question it is claimed there is little and in many cases no relationship between crude quotations and gasoline prices to the consumer. Similarly, it is often contended that there is no uniformity in the crude or gasoline tank wagon price changes. The statement is still heard occasionally that when "crude prices are reduced in one field they are advanced in another." The idea back of this claim seems to be that what is lost in the way of price in one field is made up by advance in another section. There is also a more or less general belief among those outside the industry that when gasoline consumers are favored with a drop in the price, consumers in distant sections pay a penalty by having their prices advanced.

The absurdity of these claims is known to every one connected with the oil business. Those connected with the industry are aware of the workings of the law of supply and demand which assures that one crude producing area cannot enjoy a price advantage over other sections except for short periods. The California crude situation of the past year is concrete evidence of this fact. It is also equally true that while gasoline marketing areas under normal conditions have their borders fairly well defined due to the location of the crude supply and refineries, any attempt to maintain a gasoline price out of line with that established in adjoining sections results in additional competition for the company responsible.

Actual Prices Given

These facts are clearly established in the accompanying tables covering crude price changes in representative fields and tank wagon price changes in large cities scattered throughout the United States. The year 1923 considered for the entire 12 months was one of declining prices both for crude and gasoline. Comparing the high and low crude prices for the year it will be seen that the difference, considering market conditions, is remarkable similar.

The crude reductions for the year vary from 74 cents in California to $1.65 in Pennsylvania. This difference is not so great when it is considered that California for several years has had the lowest crude price schedule and Pennsylvania the highest. Based on percentages the Pennsylvania reduction was 60 per cent and that of California 50 per cent. Outside of California and the Gulf Coast there is also a remarkable similarity in the number of crude price changes during the year. These two producing areas are accustomed to make fewer but larger changes in their crude price schedules.

In the tank wagon table the same similarity in regard to both the number of price changes and the total amount of the reduction is apparent. In the 43 cities listed in the table three had a 5-cent reduction during the year, four 6 cents, eleven 7 cents, sixteen 8 cents and nine 9 cents. This shows that in 37 representative cities scattered throughout the United States consumers of gasoline benefited equally during the past year. These cities are in turn representative of price conditions for the sections in which they are located.

Identical Prices Impossible

It is true that these price reductions did not occur at exactly the same time. It is apparent that this development would be impossible except in an industry controlled by one company. In the oil business no one company directly or through subsidiary organizations operates in all crude producing fields. In fact where a concern maintains a prominent position in one producing area it will generally be found either occupying a minor role in another field or have no interests there either directly or indirectly. Similarly no company or combination markets but a small fraction of the total gasoline consumed and although its influence as a market maker may be strong in one area it has no importance in another section.

Due to these conditions it is inevitable that a general response to change in market conditions could not develop over night. One area may be faced with a crude and gasoline famine, due to a large decline in production in the fields from which it is accustomed to secure its raw and manufactured material, while another area may have more than its requirements due to the bringing in of a new field.

This situation was illustrated early in 1923 when crude prices, due to a threatened shortage, advanced in all fields east of the Rocky Mountains but remained unchanged in California which already was beginning to sense its new crude producing possibilities, a production which later increased so that in finding new markets it broke the price structure of the entire industry. It is apparent that this price change must of necessity be gradual. The accompanying tables are proof that this equalization of price changes did occur in the oil industry during the year 1923, both in regard to the raw material and its principal product.

CRUDE PRICE CHANGES IN ALL FIELDS

Table Showing Amount and Number of Crude Price Changes in Representative Fields During 1923

	Crude Oil Prices High	Low	Difference	No. of Changes
Gulf Coast	$1.75	$ .75	$1.00	5
Wyoming—				
Salt Creek	1.65	.60	1.05	12
Oklahoma, Kansas and North Texas—				
Crude purchased on gavity basis 35 to 36.9	2.00	1.00	1.00	12
Pennsylvania—				
Bradford-Allegheny	4.25	2.60	1.65	17
Middle Western Fields—				
Lima	2.58	1.43	1.15	15
Illinois	2.37	1.22	1.15	15
Indiana	2.38	1.23	1.15	15
Noth Louisiana—				
Bull Bayou	2.00	1.10	.90	14
Arkansas—				
El Dorado (average all grades)	1.91	1.05	.85	14
California—				
30° to 30.9°	1.45	.71	.74	3

GASOLINE PRICE CHANGES IN 43 CITIES

Table Showing Amount and Number of Gasoline Tank Wagon Price Changes in 43 Representative Cities During 1923

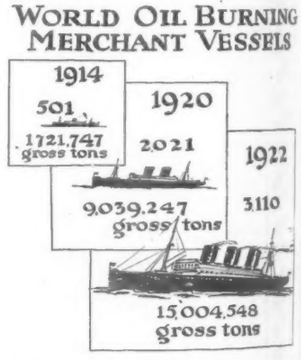
(Changes due to State or city gasoline taxes not included)

	Gasoline Tank Wagon High	Low	Difference	No. of Changes
Birmingham, Ala.	.20	.14	.06	8
Little Rock, Ark.	.20.5	.12.5	.08	13
San Francisco	.19	.12	.07	5
Denver, Colo.	.20	.12	.08	11
Hartford, Conn.	.21.5	.15.5	.09	13
Dover, Del.	.23	.14	.09	10
Jacksonville, Fla.	.20	.13	.07	9
Atlanta, Ga.	.22	.13	.09	10
Boise, Idaho	.24	.18	.06	7
Peoria, Ill.	.20.8	.12.2	.08.6	5
Chicago, Ill.	.20	.12	.08	5
Indianapolis, Ind.	.20.8	.12.2	.08.6	6
Des Moines, Iowa	.21.1	.12.5	.08.6	5
Wichita, Kans.	.20.4	.11.8	.08.6	5
Louisville, Ky.	.21	.13	.08	9
New Orleans, La.	.19.5	.10.5	.09	14
Augusta, Me.	.24.5	.15.5	.09	10
Baltimore, Md.	.22.5	.15	.07.5	10
Duluth, Minn.	.21.8	.13.2	.08.6	5
Minneapolis, Minn.	.21.5	.12.9	.08.6	5
Natchez, Miss.	.20	.12.5	.07.5	9
Kansas City, Mo.	.18.5	.10.8	.07.6	13
Great Falls, Mont.	.23.5	.18	.05.5	9
Omaha, Nebr.	.20.5	.12.25	.07	5
Reno, Nev.	.22.5	.15.5	.07	5
Newark, N. J.	.23.5	.15.5	.08	9
Albuquerque, N. M.	.25.5	.17	.08.5	15
New York	.24.5	.15.5	.09	11
Charlotte, N. C.	.21.5	.15	.06.5	11
Cleveland, Ohio	.21	.16	.05	7
Portland, Ore.	.20	.13	.07	5
Philadelphia, Pa.	.23	.14	.09	11
Providence, R. I.	.24.5	.15.5	.09	13
Charleston, S. C.	.22	.15	.07	11
Huron, Mich.	.22.6	.14	.08.6	5
Memphis, Tenn.	.20	.12	.08	14
Salt Lake City	.23	.15.5	.07.5	11
Burlington, Vt.	.24.5	.15.5	.09	10
Norfolk, Va.	.21.5	.15	.06.5	9
Charleston, W. Va.	.23	.15	.08	10
Milwaukee, Wis.	.20.6	.12	.08.6	5
Casper, Wyo.	.18	.13	.05	8
Seattle, Wash.	.20	.13	.07	4

"FLOATING TO VICTORY ON AN OCEAN OF OIL"

As it was recognized a few years before the World War and greatly emphasized shortly after the war started, that the oil burning battleships were essential to success in modern naval wartime operations, so also was it soon recognized that modern conditions and international competition demanded the oil burning merchant vessel.

During the World War the United States supplied 80 per cent of the Allied requirements for fuel oil. It was due to the initiative and pioneering instincts of American oil men that fuel oil became available in quantity and at cheap prices, making possible the conversion of the existing merchant craft to oil burner and



the construction of later vessels as oil burners. This great modern development resulting in relief to human labor below decks, greater vessel speed, greater steaming radius and inestimable advantages in the world of commerce is one of the most important matters affecting life and trade that has occurred in recent years.

In 1914 there were 501 oil burning vessels in the world, with a gross tonnage of 1,721,747. In 1920, the number had increased to 2,021 with a gross tonnage of 9,039,247. In 1922 there were 3,110 with a gross tonnage of 15,004,548.

GETTING MORE GASOLINE

Of the increase of 33.55 per cent attained in gasoline, 17 per cent has been due to the richer gasoline content of the new crudes which have come on the markets, and to recent improvements in refinery technique, which have secured a larger proportionate recovery of the gasoline content of all crudes. Some 16.55 per cent is attributable to the larger volume of crude run through the refineries. A third and greatly underestimated contribution to the gasoline surplus is casinghead gasoline, manufactured from oil well or natural gas. Competent authorities place the output of this gasoline in 1922 at almost 20,000,000 barrels.—A. C. Bedford.

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Butler Gas Tight thief hole hatches are regular equipment on our tanks.

Specially machined and properly weighed to withstand two ounces up pressure whether fastened down or not.

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Gasoline Filling Stations Big Item

Marketing Companies Are Being Forced to Open Their Own, Protecting the Motoring Public in Quality, Price and Service

By N. O. Fanning

NEW YORK, March 17.—One of the features of the eastern gasoline situation this year promises to be the construction of service stations owned by the marketers themselves, which will large take the place of the temporary stations now seen almost everywhere. The Standard Oil Co. of New York may lead the big companies in this new construction, as the officials of the company are of the opinion that sooner or later gasoline will be marketed entirely through company-owned stations. This system gives better service and protects the consumer and the companies from substitution.

At present the Standard Oil Co. of New York has not much more than a half dozen stations of its own, but the company is understood to have obtained options or leases on numerous sites and will begin construction of actual service stations in 1924 on a large scale The investment in service station equipment and land by this concern alone in 1924 and 1925 may reach $10,000,000.

The old line Standard Oil marketers in the east have never gone into the building of service stations until recent years. The Standard Oil Co. of New Jersey has led the group in this respect, now having several hundred stations in its territory. The Standard Oil Co. of New York has lagged behind, and has only recently determined on the carrying out of a new policy. The latter sells gasoline on a steel barrel basis to approximately 1,500 garages and privately owned gasoline stations in Greater New York alone. This indicates that the substitution of company-owned stations on the part of this concern will represent a big undertaking, both in labor and money.

The company's territory includes the entire State of New York and all New England. This, considering area, is the largest gasoline consuming district in the world. Yet from the point of view of modern marketing methods it is behind nearly every other part of the country. For it is not necessary to argue the advantages of the company-owned gasoline service station.

Independents Force Move

It is difficult to ascertain the pioneer in the construction of company-owned service stations in this territory, but the distinction probably goes to The Texas Co. Those who have seen the artistic and attractive gasoline service stations in the West know where this idea originally came from. The Texas Co. several years ago began the construction of many attractive stations in New York City and vicinity, and these were found to be paying propositions, in view of the advertising which they effected. Yet this is practically the only company to have its own stations here until very recently.

The company which now stands second in number of owned service stations is the Pure Oil Co., which has spent many thousands of dollars in building them. These two concerns—Pure Oil and Texas Co.—have practically forced the other concerns to inaugurate the policy of maintaining service stations.

The old line marketers have hesitated putting in their own stations for several reasons. In the first place the investment entailed is necessarily large. Companies owning service stations and employing men to run them have to compete with individuals who set up temporary stations—usually "eye-sores" — kept open from daylight to midnight. The eastern markets are honeycombed with these temporary stations, put up at relatively small cost.

On the other hand, one distinct advantage of the company-owned station is that gasoline sold through them is bound to be as represented. Oil companies here have run up against a good deal of substitution of inferior gasoline in pumps bearing a well-known name but not selling the gasoline of that brand. There are so many small service stations that this practice is said to be rather large. Motorists, as a rule, prefer the company-owned station, where they know what they are getting. The service is apt to be good, also, at the company-owned stations. Such a station is a good advertisement for the gasoline sold, when it is of an attractive design and in a favorable location.

Big Investment Involved

The Standard Oil Co. of Indiana is one of the large companies which follows the policy of maintaining its own stations. Its investment in service stations is in excess of $10,000 per station, and its annual sales per station estimated at between 150,000 and 200,000 gallons. In the East, particularly in the big cities, the investment might easily be $20,000 per station, but the volume of sales should be greater. In the southwest sales of gasoline are between 125,000 and 150,000 gallons per station.

That the Standard Oil Co. of New York intends to build its own service stations is taken to mean that every big marketer of gasoline will sooner or later market gasoline in this territory through owned service stations, and in all probability 1924 will mark the beginning of the carrying out of this policy on a large scale. If it is not started quickly, the companies will not be able to catch up to the ever-growing demand for gasoline. It would not be too much to estimate the probable investment in company-owned stations during the next two or three years at between $25,000,000 and $50,000,000, including land.

There are seven big companies, at least, and perhaps more. which will be involved in this development. Among them are the Standard Oil Co. of New Jersey, Standard Oil Co. of New York, Atlantic Refining Co., Texas Co., Gulf Refining Co., Pure Oil Co. and Tide Water Oil Co. All of these have invested a great deal of money in the marketing of gasoline on the Atlantic Seaboard, largely in pumps and in advertising. It is believed that the construction of company-owned stations will mark a final and permanent step in the development of gasoline marketing on the basis of efficiency service.

Cost Runs to Millions

When the motorist in need of gasoline approaches a drive-in station and is promptly supplied with "gas" and oil, water and air, how often does he give a thought to the expense of erecting and maintaining these filling stations which dot the country?

A recent compilation credited one company with an investment of $20,000,000 in these service stations scattered over 10 States. Approximately one-half of this amount was charged to sites, which being necessarily in the most prominent and convenient centers, command high prices. One company paid $50,000 for a desirable location in a southern city. One station built in a New England city several years ago could not be duplicated today for $75,000. But the immense bulk of the filling stations are less pretentious, designed primarily for service but with the compulsion of attractiveness for the sake of the neighborhood and advertising effect.

The cost of service stations runs usually somewhere between $6,500 and $12,500. The lower is of standardized steel construction and the higher of white tile; both prices being exclusive of real estate costs, which vary according to location and city.

Besides the company-owned stations the larger companies have big investments in pumps and tanks leased to garage owners and gasoline dealers at a nominal rental, some at $1 a year. It costs from $250 to $400 to install a pump and 1,000-gallon tank. Many dealers have pumps of different companies, selling that many different brands of gasoline and motor oil. In the Middle Western States there are nearly 7,500 filling stations and 35,000 pump stations. There are 10,000 in New York City and 15,500 in Pennsylvania.

Partial List 80,000

Without attempting to present a complete list for the entire country the appended figures were given for service stations owned and pumps leased or supplied for the companies named in the past year. The total runs over 80,000, which, of course, is probably greatly increased today and is but a fraction of the aggregate represented in every city, town and cross roads in the United States, the most far reaching and accessible service offered by any one industry in the world.

	Service Stations	Pumps Leased or Sold
Atlantic Ref. Co.	91	17,515
Gulf Ref. Co.	187	9,507
S. O. of New York	10	10,000
The Texas Co.	161	6,186
Union Oil Co. (Cal.)	23	.....
Shell Co. of Cal.	204	.....
Sinclair Co.	121	2,152
S. O. of N. J.	87	15,000
S. O. of Ohio	410	2,500
S. O. of Indiana	1,668	4,700
S. O. of California	700	.....
Pure Oil Co.	213	2,248

Company-owned stations are justified on the basis that they advertise the company's product and also tend to stabilize prices. But when a company puts in its own station it must have nothing short of the best location, equipment and employes. An individual can set up a gasoline station on an unoccupied space for a nominal rental (on a 60-day removal clause), have his equipment installed for $1 a year and work as many hours as he chooses. A company-owned station must have at least two employes receiving an average of $6 for an 8 or 10-hour day, plus all the refinements and free service which present-day gasoline selling requires to get and keep the business.

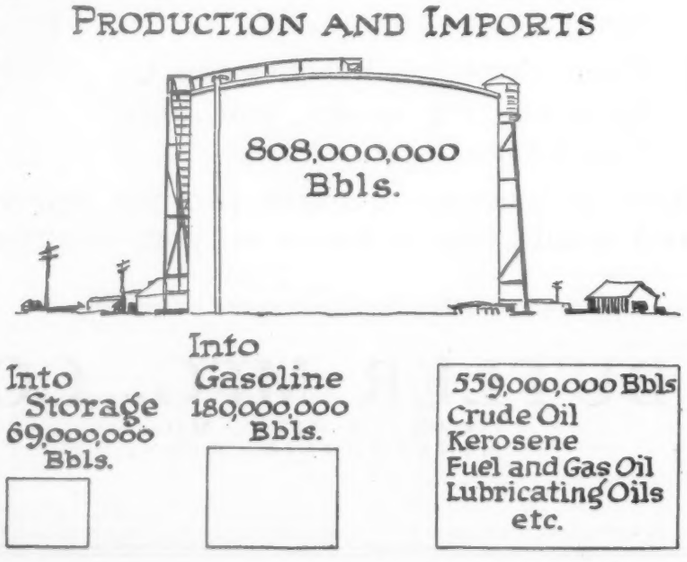
WHEN YOU USE 5 GALLONS OF GAS HALF A BARREL OF CRUDE NEEDED

Every time you five gallons of gas in your car somebody has to pump nearly half a barrel of crude oil out of the ground.

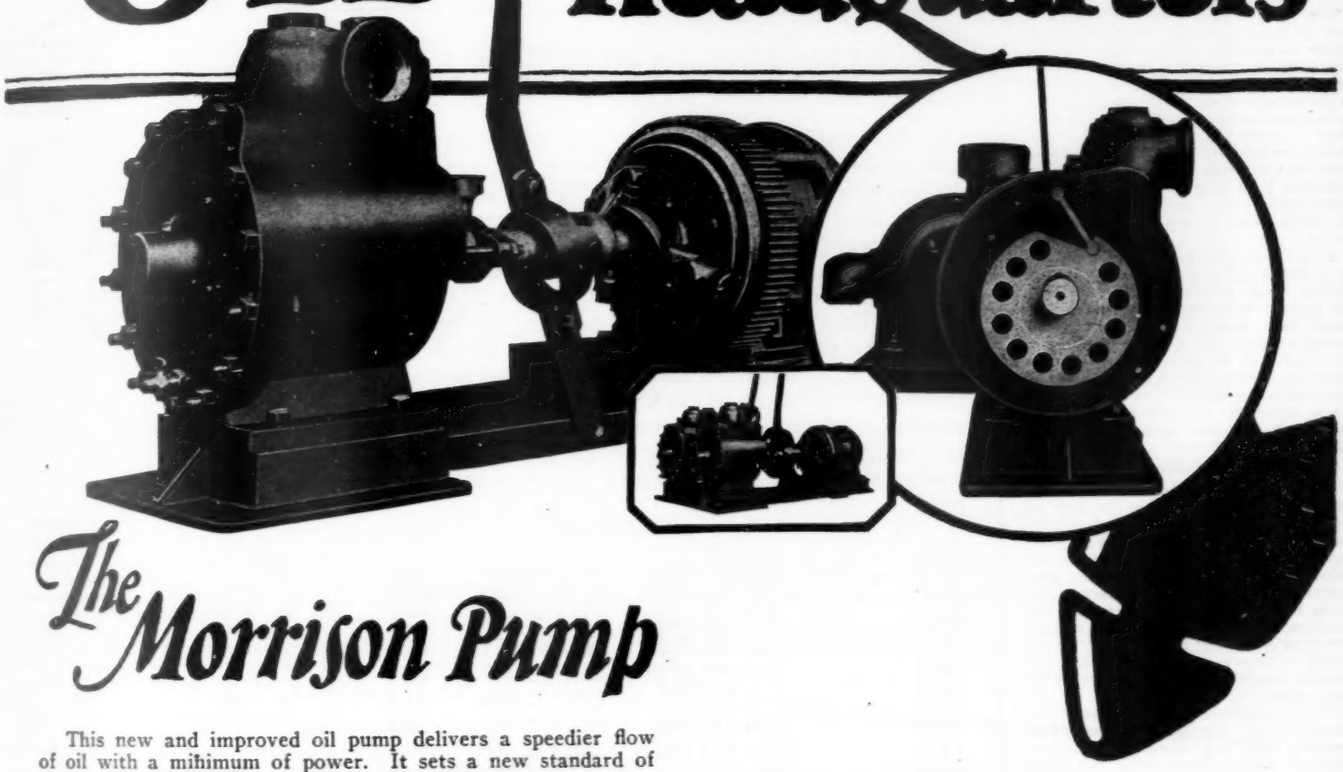
The greatest demand for any product of crude oil is for gasoline and petroleum in this country is produced primarily to supply gasoline requirements. The petroleum industry has succeeded in meeting this demand and is coaxing out of the earth the half-barrel of crude oil needed for every casual order of five gallons of gas. But in filling this order it has a balance of products from a barrel of crude oil to dispose of.

Of the total of 808,000,000 barrels of crude oil produced in the United States and imported in 1923, 69,000,000 barrels of crude oil went into storage. Of the 739,000,000 barrels remaining, the total production of gasoline for the year was 180,000,000 barrels and the oil industry was required to dispose of 559,000,000 barrels of petroleum or its products other than gasoline.

It takes over three barrels of crude oil to make one barrel of gasoline.



Oil Equipment Headquarters



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- Self-Closing Line Valves
- Self-Closing Angle Valves
- By-Pass Valves
- Angle By-Pass Valves
- Straight Check Valves
- Curb Pump Angle Valves
- Hose Nozzles
- Frost-Proof Drain Valves
- Emergency Valve for Truck Tank
- Foot Valve
- Angle Foot Valve
- Automatic Fillers
- Automatic Vents
- Pressure Vents for Field Tanks
- Thief Cap and Vents
- Fill Cap
- Ball and Socket Joint for Filling Station Hose
- Double and Single Swing Joints
- Union Wrench Coupling
- Tank Car Unloading Connection

TRUCK TANKS—
- Welded
- Riveted

TANKS—
- Bulk Storage Tanks
- Underground Tanks
- Hydro-Pneumatic Tanks
- Filling Tanks
- Water Storage Tanks
- Air Receivers
- Fuel Oil Tanks
- Steel Piers

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MISCELLANEOUS—
- Grease Kettles
- Agitators
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"OIL EQUIPMENT HEADQUARTERS"

Crude in Storage Far From Excessive

General Misconception Seems to Exist Regarding Stocks of Petroleum. Public Protected Against Future Needs

By Andrew M. Rowley

Few features of the oil business have been so misunderstood, not only by the public in general, but by many persons who have been making a study of the entire petroleum industry, as that relating to the amount of crude oil held in storage in various sections of the United States. Even a number of men connected either directly or indirectly with the oil business have been more or less misled by figures published from time to time relating to these crude oil stocks and the manner in which these figures have been presented.

To say that there was a certain amount of crude petroleum in storage in the United States on January 31 and that the amount represented a supply for so many days, based on the consumption during January, means little or nothing. There are not 12 Januaries in the year and with a consumption that is and has been increasing steadily, such a comparison is manifestly valueless to persons desiring an accurate conception of the future of the industry.

Based on Future Needs

The amount of stocks of any commodity should be considered not in the light of what the consumption of that commodity has been in the past but what good business judgment indicates will be the requirements of the future. Any good business man, in laying in a stock of the goods he handles, makes a survey of the situation and decides what the demand for those goods will be, not what the demand has been in the past, but what conditions indicate the demand will be in the future.

This is particularly true in the oil industry where weather conditions have such an important bearing on consumption of gasoline and other petroleum products. To estimate the number of days' supply on hand by the consumption of the product in any one month certainly is an inaccurate way of determining the relation of these stocks to the general situation. It would be just about as accurate for a grocer in a summer resort town to lay in a stock of groceries based on what he sold during the winter months.

The oil business, like any other, is based absolutely on the law of supply and demand. The demand can be estimated fairly accurately because of the uses made of petroleum products. The number of automobiles being made and sold, the automobile registrations in the different States, the number of fuel oil burners being manufactured and installed and other such information which can be obtained easily—all these are the index of what the oil man may expect to be the requirements for crude oil and its products in the future. He can estimate fairly accurately the average amount of gasoline consumed by each automobile in the United States and what the automobiles will require in the coming year, based on the increase in registration and the increase in consumption of the past year.

Consumption Increasing

Consumption has been increasing steadily and showed an increase during 1923, as compared to 1922 of 20 per cent. At the rate automobiles are being manufactured and distributed, the number of automobile registrations being reported and the wide distribution of those things which require petroleum products in their operation, it is a comparatively simple manner to estimate that the consumption of crude oil and its products during 1924 will be at least 20 per cent greater than during 1923.

Hence, it seems the only logical manner in which to figure the relation of the amount of crude oil held in storage throughout the United States is to compare it to the consumption which is expected—not to the consumption of the past month or previous month.

Based on this estimate, the stocks of crude petroleum on hand the first of January of this year, while the greatest in the history of the industry as far as barrelage is concerned, are in reality 4.7 per cent less than the average stocks for the past 15 years. In other words, the amount of crude oil held in storage January 1 would fail by 4.7 per cent of going as far during 1924 as the average stocks held on the first of the year during the past 15 years.

Need of Vast Storage

The petroleum industry is the second greatest business in the United States. With more than 15,000,000 automobiles registered during last year, every one dependent upon gasoline for its motive power, the oil business has an immense responsibility on its shoulders to see that sufficient crude oil is held available for the making of gasoline, lubricating oils and greases, for the use of these automobiles alone. Should drilling operations cease or slacken to any material extent for any period of any length, the petroleum industry would be hard pressed to supply gasoline and oils for these automobiles.

Hence, it is that when stocks of crude petroleum begin to dwindle and become lower than a safe point, it is necessary to increase the price being paid for crude oil in order to stimulate drilling operations to obtain more crude oil. When these operations reach a point where a good supply of petroleum is assured, the necessity of the high prices is ended and prices are lowered. There can be no mystery in these price changes. They are based absolutely on the law of supply and demand. When the demand is large and the supply limited, prices are bound to advance. This pertains not only to the oil business, but to every other business. Everyone knows that the price of eggs is higher in winter than in the summer because the hens lay fewer eggs in the winter. The demand remains fairly constant, but the supply is less in winter, hence, the higher prices.

Situation May Change Quickly

The situation confronting the oil business may change overnight. It did during 1923. It is likely to occur at any time. If a big field of oil is discovered and that field is developed rapidly, placing large amounts of crude oil on the market, the price of crude oil is bound to be lowered. If no new fields are discovered and the production of crude petroleum throughout the United States continues to be less than the consumption of crude oil and its products, prices certainly will go higher. There is no getting away from that fact.

Fluctuations in the prices of crude oil and gasoline, however, are not any greater than in other lines of business. For example, during the first week of March, the price of fresh eggs in Tulsa dropped from 50 cents a dozen to 25 cents a dozen in one day. A week of good weather caused the hens to lay more eggs and the supply increased so much within a short time the price was cut in half by dealers.

The stocks of crude petroleum held by the oil companies, pipe lines and refineries throughout the United States represents hundreds of millions of dollars tied up, not only in the oil itself, but in the storage in which it is held. This oil deteriorates in value the longer it is held as evaporation results in a lessening of its value and causes a loss in the amount of gasoline the crude will yield. The oil companies obtain no interest on these hundreds of millions of dollars tied up in this oil storage but they must store the oil and hold it to protect the oil producer who must sell his oil and to protect the public against a shortage.

Consumers Are Protected

Some oil in storage is estimated to have been held as long as 16 years. What other line of business would voluntarily carry a dead weight which brings in no income and represents such a large amount of money, for so long a period, simply to protect the producer upon whom the entire oil industry depends and to maintain a steady and constant supply to the consumer.

On the first of January of this year there was slightly more than 333,000,000 barrels of crude oil in storage throughout the United States. It costs more than 50 cents a barrel to build storage for crude petroleum, the 55,000-barrel tanks costing between $30,000 and $35,000 each. The oil in storage at present prices would be worth more than $600,000,000.

AMOUNT OF CRUDE OIL IN STORAGE LESS THAN AVERAGE FOR 15 YEARS

That the amount of crude oil in storage in the United States at this time is far from being excessive is shown by the following table. Figures in the table, except that for consumption in 1924, were obtained from records of the United States Geological Survey. Consumption for 1924 was estimated as being 20 per cent greater than during 1923, which was 20 per cent greater than 1922. The first column of the table shows the year, the second, the amount of crude oil reported in storage by the Geological Survey as of the first of January of that year; the third, the consumption of crude petroleum for the year, and the last column the percentage of crude in storage at the first of the year as compared to the requirements for crude of that year.

(In barrels of 42 gallons)

Year—	Stocks	Consumption	Percentage
1910	116,687,000	191,483,000	60.9
1911	131,030,000	211,150,000	62.0
1912	137,233,000	240,188,000	57.1
1913	122,870,000	261,692,000	46.9
1914	122,803,000	261,692,000	46.9
1915	141,550,000	290,772,000	48.6
1916	194,185,000	324,192,000	59.9
1917	179,372,000	378,317,000	47.4
1918	159,452,000	412,273,000	38.7
1919	128,586,000	420,462,000	30.6
1920	136,213,000	530,532,000	25.6
1921	128,187,000	526,032,000	24.4
1922	190,762,000	592,442,000	32.2
1923	253,475,000	710,739,000	35.7
1924	333,053,000	852,887,000	39.0

Average for 15 years, 43.7 per cent.

Stocks of Gasoline Also Small

(Figures in gallons from U. S. Bureau of Mines)

Year—	Stocks	Domestic demand	Percentage
1918	412,256,883	3,129,266,347	13
1919	297,326,983	3,434,821,486	9
1920	446,793,431	4,250,696,163	10
1921	462,381,837	4,516,027,256	10
1922	586,087,132	5,372,085,042	11
1923	883,792,861	6,685,035,280	13
1924	1,074,899,650	*8,356,294,100	12

*Estimated.

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GASOLINE PRICES ARE GOVERNED BY LAW OF SUPPLY AND DEMAND

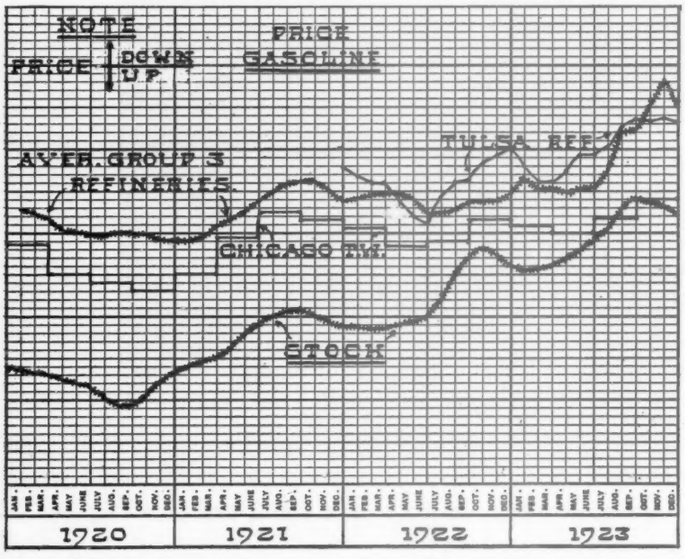
By Arthur Knapp

The law of supply and demand is, in general terms, that law which governs the price of any commodity in an unrestricted competitive market. The law as applied to the gasoline industry operates in six phases depending upon conditions within the industry. A general expression of the law is: Output or some relation between stocks or inventory value, and consumption or demand governs price changes.

Demand is the potential absorbing power of the consuming market. Demand is the expression of the needs of the consumer and may depend upon the economic value of the oil to the consumer. In times of low prices, the demand is the same as the consumption but during periods of high prices or deficiency in supply, the demand may be greater than consumption.

Output vs. Consumption Phase

The price of gasoline would be affected by variations in the relative volumes of output and consumption if stocks of gasoline were economically very small. This phase has not operated in the gasoline market in recent years.



Stocks vs. Consumption Phase

When stocks are large there is some relation between stocks and consumption which affects price. The relation stocks divided by consumption equals days' supply is evidently not the relation which expresses the law of supply and demand since there is no parallel between changes in days supply and price. The ratio of the rate of change of stocks and consumption is probably more nearly correct as an expression of the law in this phase. Crude oil prices are governed at the present time by this phase but gasoline prices are not.

The remarkable regularity with which the price curves follow the stock curve in Figure 1 indicates that the phase of the law under which the gasoline market has operated for several years is that phase in which the cost of storage and inventory value affect prices directly, with consumption as a minor factor.

Figure 1 shows the relation between gasoline prices and volume of stocks during the past four years. The years 1920 to 1922 were years in which it is difficult to determine whether the storage costs or the inventory value of gasoline was the predominating influence but both had more influence upon price than had consumption. During the year 1923 it is certain that inventory had the greater influence upon price.

The curve of stocks of gasoline shown in Figure 1 is the average of three curves in which the influence of seasonal changes has been approximately eliminated. The first of these three curves was obtained by considering the seasonal changes of the year 1918 as being typical. The stocks on hand for each month during the following years were plotted as a per cent of the corresponding month in the typical year. The second and third curves were produced by considering 1919 and 1920 respectively as being typical years and plotting the curves of the following years as percentages over the typical years. These three curves were averaged to give the stock curve.

Output, Stocks and Inventory

We have nothing upon which to base any supposition as to what will happen to price when the demand for gasoline cannot be met to the extent that demand rather than consumption will influence price. Prices will be governed by the economic value of the oil to the consumer. It will be a condition where the price will be influenced by the price which the consumer is willing to pay as much as the price which the petroleum industry is willing to take.

Summary

Prices are very closely governed by the law of supply and demand. The law operates under different phases. Since it is possible that price changes may be due to different phases during different periods, price studies should include the determination of which phase was operative during any period before comparisons between price changes are made.

Application of the Law

It occurred to the writer than congressional and other investigators who are interested in the prices of petroleum and its products, should first establish the law of supply and demand for the period under investigation. If, after establishing the law, they could show that prices did not follow the law, then they would be in a sound position to suggest legislation and regulation. But when the law is ignored by price investigators, then they have no good yard stick whereby to measure prices in order to show manipulation. It becomes a matter of opinion. The mere fact that the price of petroleum or one of its products rises during a period when the volume of stocks is increasing and later falls while the stocks continue to increase does not necessarily indicate price manipulation. The price changes may have occurred under different phases of the law and both changes may have been entirely justified.

while the storage to hold it would represent an investment of about $150,000,000 more. Consequently, the petroleum industry at this time is bearing a burden of having more than $750,000,000 tied up in oil in storage.

Not only are the men engaged in the oil business holding this oil until it is needed by the consumers, without receiving interest on their investment, but they are confronted daily with the possibility someone will discover a new oil field and a flood of crude oil may be thrown on the market which will result in a lowering of the prices of crude and a consequent heavy loss to themselves.

Holding crude petroleum in storage is merely one of the great and expensive hazards associated with the oil business. It requires a vast sum of money and a whole lot of nerve, but it is necessary in order that automobile owners and other consumers of petroleum products be assured of an adequate supply of gasoline and other products.

Just how expensive and how great a hazard it is to the oil companies to maintain large quantities of crude petroleum in storage is shown by the experience of last year. During 1923 there were 105 days on which prices of crude petroleum were changed due to fluctuations in production. From April of last year until the latter part of December, almost the first of this year, every price change was a reduction. In the Mid-Continent area, which comprises the great oil producing States of Oklahoma, Kansas, Texas, Louisiana and Arkansas, the price of crude oil dropped from $2 down to $1 a barrel, or a reduction of 50 per cent. In the eastern fields, the price of Pennsylvania grade of oil dropped from $4.25 a barrel down to $3.10 a barrel. In California prices were reduced to an average of 71 cents a barrel from a price of $1.12 a barrel.

WHY GASOLINE NAGS

It cost the American people more to run their automobiles in depreciation alone than it does the gasoline they use. There are many expenses in connection with an automobile that cost more than the gasoline, but the ordinary citizen always talks of the gasoline. Why? It is quite human and quite natural because it is that thing that comes every day. He buys his automobile after a long period of anxiety, and when he pays for it he pays for it in a bunch and it doesn't hurt him as much; if it does, it doesn't hurt him as long.—Thomas A. O'Donnell.

FEAST OR FAMINE

We are continually vibrating back and forth between an overproduction of oil and the threat of a shortage of oil with no adequate resources on which to draw to stabilize either our supplies or our prices.—Henry L. Doherty.

CRUDE PRICE CHANGES BY MONTHS FOR 1923

Tables Compiled by C. O. Willson

CALIFORNIA

	Jan. 1	Jan. 6	Apr. 10	Aug. 1	Oct. 9
14° to 19.9°	60	...	*...	...	...
20° to 20.9°	63	62	61	...	...
21° to 21.9°	67	65	62	...	...
22° to 22.9°	73	70	65	...	63
23° to 23.9°	80	75	68	...	66
24° to 24.9°	88	80	71	...	68
25° to 25.9°	96	85	74	...	68
26° to 26.9°	105	90	77	...	67
27° to 27.9°	115	95	80	...	68
28° to 28.9°	125	100	83	...	69
29° to 29.9°	135	105	86	...	70
30° to 30.9°	145	111	89	...	71
31° to 31.9°	155	117	92	...	72
32° to 32.9°	165	124	95	...	73
33° to 33.9°	175	131	98	...	74
34° to 34.9°	185	138	101	...	75
35° and above	195	145	104	...	75

*Note: On August 1 crude prices in the San Joaquin Valley were reduced to the same price scale as posted for the Los Angeles and Orange County fields of southern California. The changes made on April 10 did not apply to the San Joaquin fields and the prices in effect on January 6 in all California continued in the San Joaquin Valley fields until August 1.

GULF COAST

	Jan. 1	Feb. 8	Mar. 15	July 3
Sour Lake, Humble, Goose Creek, Vinton, West Columbia, Orange, Jennings, Spindletop, Pierce Junction "A," Hull, Blue Ridge "A"	$1.25	$1.50	$1.75	$1.50
Pierce Junction "B," Blue Ridge "B"	.80	1.05	1.30	1.05
Goose Creek "B," Hull "B"	...	....	....	1.25

	July 26	Aug. 20	Oct. 17	Nov. 2	Dec. 27
Gulf Pipe Line Co., Goose Creek, Hull, Sour Lake, Batson, Saratoga, Spindletop, Orange, Vinton, Edgerly, Jennings	$1.25	$1.00	$0.75	$1.00	$1.10
Grade "B," Pierce Junction, Blue Ridge	.90	....	.65	.90	....
The Sun Pipe Line Co., Grade "A," Humble, Hull, Goose Creek, Orange, Spindletop, Saratoga, Batson, Dayton, Sour Lake	1.25	1.00	....	....	1.10
Grades "B," Blue Ridge, Pierce Junction	1.00	....	....	....	....
Humble Pipe Line Co., Goose Creek, Hull, West Columbia, Orange	1.25	1.00	....	....	1.10
Grade "B" Pierce Junction	1.00	....	....	....	....
Texas Pipe Line Co., Humble, West Columbia, Orange, Sour Lake, Saratoga, Batson, Vinton, Jennings, Markham	1.25	1.00	....	....	1.10
Sinclair Pipe Line Co., West Columbia, Damon Mound	1.25	1.00	....	....	1.10

WYOMING AND MONTANA

	January 1	15	18	29	February 2	3	10	17	Mar. 21	April 12	24	May 3	7	14	June 6	July 31	Sept. 21	Oct. 20	Nov. 9	11	Dec. 20
Rock Creek	1.15	1.25	1.35	1.45	...	1.55	1.65	1.75	...	...	1.65	1.55	1.45	1.35	...	1.25	.90	...	.60	...	...
*Big Muddy	1.05	1.15	1.25	1.35	...	1.45	1.55	1.65	...	...	1.55	1.45	1.35	1.25	...	...	.75	...	.45	...	...
Mule Creek	.90	1.00	1.10	1.20	...	1.30	1.40	1.50	...	...	1.25	1.15	1.05	.95	...	...	.75	...	.45	...	...
†Grass Creek	1.50	1.60	1.70	1.80	...	1.90	2.00	2.10	...	...	2.00	1.90	1.80	1.70	...	...	1.35	...	.95	...	...
Elk Basin	1.50	1.60	1.70	1.80	...	1.90	2.00	2.10	...	...	2.00	1.90	1.80	1.70	...	...	1.35	...	.95	...	.90
Lance Creek	1.50	1.60	1.70	1.80	...	1.90	2.00	2.10	...	...	2.00	1.90	1.80	1.70	...	...	1.20	...	.80	...	...
Sunburst	...	...	...	...	...	...	...	...	1.40	1.30	1.00	.90	.80	...	.70	...	...	...	...	...	...
Below 28°	.70	.80	.90	1.00	...	1.10	1.20	1.30	...	...	...	...	...	...	...	...	...	...	...	...	...
28° to 33.9°	.70	.90	1.00	1.10	...	1.20	1.30	1.40	...	...	...	...	...	...	...	...	...	...	...	...	...
34° and above	.70	1.00	1.10	1.20	...	1.30	1.40	1.50	...	...	...	...	...	...	...	...	...	...	...	...	.90
Osage	1.50	1.60	1.70	1.80	1.90	...	2.00	2.10	...	...	2.00	1.90	1.80	1.70	...	...	1.35	1.20	.80	...	...
Cat Creek	1.50	1.60	1.70	1.80	1.90	...	2.00	2.10	...	...	2.00	1.90	1.80	1.70	...	...	1.35	...	.95	...	...
Salt Creek	1.05	1.15	1.25	1.35	1.45	...	1.55	1.65	...	...	1.55	1.45	1.35	1.25	...	...	.90	...	.60	...	...
Greybull-Torchlight	1.50	1.60	1.70	1.80	1.90	...	2.00	2.10	...	...	2.00	1.90	1.80	1.70	...	...	1.35	...	.95	...	...
Hamilton Dome	1.05	1.15	1.25	1.35	1.45	...	1.55	1.65	...	...	1.55	1.45	1.35	1.25	...	...	.82½	...	.52½	...	...

*August 10, 95c. †Grass Creek (black) was priced 90 cents on June 28, and that price continued for the remainder of the year. A price of 70 cents was in effect on Lander crude for the entire year

Absorption Towers and Still Filled With *"FOSTER BAFFLES"*

Hise Plant of the Arab Gasoline Company, Eastland, Texas

The "FOSTER BAFFLE" is the answer to the need of getting the maximum amount of flow-surface for the Mineral Seal Oil while in the Absorption Tower. Made from 29 gauge copper-bearing sheet steel, the FOSTER BAFFLE is so designed that each cubic foot presents 125 square feet of flow-surface.

In an Absorption Tower 4 feet in diameter and 40 feet high, filled with FOSTER BAFFLES, if the thin film of oil covering the baffling surface were spread out on a flat surface the oil would cover **one acre.**

This is one of the reasons for the high efficiency of FOSTER BAFFLES—and a reason why they have been installed in more than 40 Gasoline plants. It is also one of the reasons why some of our customers have placed as many as six different orders for this Baffle.

Our organization is equipped to handle every detail of the design, construction and operation of Gasoline plants and properties. We specialize in the conversion of compression plants into the highest efficiency type of Oil Absorption plants. Surveys made of proposed installations.

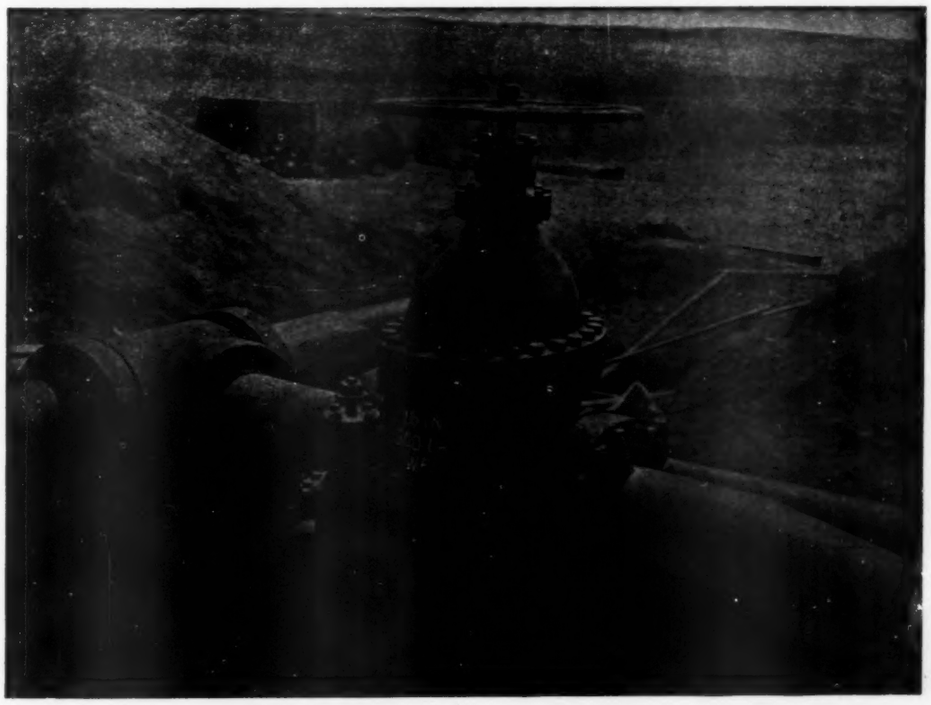
If you haven't received a copy of our Baffle Book and large size "Gaso-Graph" showing production, consumption and price of Gasoline for the last four years your request on a post card will bring either or both to you.

FOSTER & BOWLES CORPORATION

Consulting, Manufacturing and Operating Engineers—Specializing in Natural Gasoline Plants

Wright Building, Tulsa, Oklahoma

"The Valve With a Leg to Stand On"



Any Size = Any Pressure

Good Pipe Line Construction Includes Westcott Valves

Manufactured By **Westcott Valve Company, Inc.** **Seneca Falls N. Y.**

OKLAHOMA, KANSAS AND NORTH AND CENTRAL TEXAS

In these fields especially the latter part of the year there was considerable variance in price as posted by the major purchasing companies. In the following tables the posted price changes of the Prairie Oil and Gas Co. are given together with those of the Magnolia Petroleum Co. In North and Central Texas area the prices of The Texas Co. and Humble Oil and Refining Co. are given as effective beginning October 8. To obtain other variations from the posted price changes of the Prairie Oil and Gas Co. attention is called to the accompanying chronological changes.

Prairie Oil and Gas Co.:

	January				February			April	May				Sept.	Nov.
	1	13	17	27	3	10	17	23	3	5	12		13	8
Below 28°	$0.90	$1.00	$1.10	$1.20	$1.30	$1.40	$1.50	$1.40	$1.30	$1.20	$1.10	Below 33°	$0.90	$0.75
28° to 29.9°	1.00	1.10	1.20	1.30	1.40	1.50	1.60	1.50	1.40	1.30	1.20	33° to 39.9°	1.30	1.00
30° to 32.9°	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.60	1.50	1.40	1.30	40° and above	1.75	1.35
33° to 34.9°	1.25	1.35	1.45	1.55	1.65	1.75	1.85	1.75	1.65	1.55	1.45			
35° to 36.9°	1.40	1.50	1.60	1.70	1.80	1.90	2.00	1.90	1.80	1.70	1.60			
37° to 38.9°	1.60	1.70	1.80	1.90	2.00	2.10	2.20	2.10	2.00	1.90	1.80			
39° and above	1.80	....	....	....	....	....	....	....	....	....	....			
39° to 40.9°	....	1.90	2.00	2.10	2.20	2.30	2.40	2.30	2.20	2.10	2.00			
41° and above	....	2.10	2.20	2.30	2.40	2.50	2.60	2.50	2.40	2.30	2.20			

	January				February			April	May			July	Sept.		Oct.	Nov.	Dec.	Dec.
	1	15	18	27	3	12	17	23	2	5	12	20	1	19	30	6	15	29
Magnolia Petroleum Co.:																		
Below 28°	$ .65	....	$ .70	....	....	$ .85	$ .90	$ .80	$ .75	$ .70	....	$ .50	....	....	....	$ .90	....	$ .50
28° to 30.9°	.75	....	.85	.90	....	1.30	1.25	1.15	1.10	1.05	....	.85	.75	.70	....	.60	....	.75
31° to 32.9°	1.10	1.20	1.30	1.40	1.50	1.60	1.70	1.60	1.50	1.40	1.30	....	1.10	.90	....	.75	....	.90
33° and above	Met Prairie prices on above dates.																	
33° to 34.9°													1.25	Same as Prairie.				
35° to 36.9°													1.40	Same as Prairie.				
37° to 38.9°													1.60	Same as Prairie.				
39° and above													1.80	Same as Prairie.				
33° to 39.9°													....	....	1.10	1.00	....	....
40° and above													....	....	1.25	....	....	....
North and Central Texas only:																		
32° to 35.9°																	1.00	1.15
36° to 38.9°																	1.15	1.30
39° and above																	1.30	1.40

Note: The changes on December 28 applied to all fields.

	January					February			April	May		June			July			Aug.	Sept.	Oct.	Nov.		Dec.	
	1	15	18	23	25	1	3	10	13	17	5	12	3	5	12	14	23	28	29	3	5	20	1	1	30	8	19	27	31
Thrall	$1.50	$1.60	$1.70	....	....	....	....	....	....	$1.85	$1.90	....	$1.80	$1.70	$1.60	$1.60	....	$1.80	....	....	....	....	....	$1.00	....	....	....	....	....
Corsicana ‡	1.00	1.10	1.20	....	....	....	1.30	....	1.45	1.50	....	1.40	1.35	1.30	1.25	....	$1.80	....	$ .90	....	*.75	....	*1.00	....	*.75	....	*1.00	$1.25	....
Corsicana †	.65	....	.70	....	....	....	....	....	.85	.90	....	.80	.75	.70	....	....	.65	....	.60	....	....	.45	....	....	....	.40	....	....	....	.50
Mexia	1.55	....	....	$1.80	....	$1.90	2.00	2.10	....	2.20	2.60	1.90	1.80	1.70	1.60	....	1.50	1.25	....	1.00	....	....	....	....	....	....	....	1.25	....	....
Currie §	1.80	....	....	2.20	....	2.30	2.40	2.50	....	2.60	2.40	2.30	2.20	2.10	2.00	1.90	1.70	1.35	....	1.00	....	....	....	....	....	*.75	....	*1.00	1.25	....
Powell	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1.00	....	....	....	....	....	....	....	....	....	....	....	....	....	....

	Jan.		February			April			May		June		July	Dec.
	1	23	1	2	10	17	5	23	2	5	12	22	28	3	27
Humble Oil & Refining Co.:															
Currie	$1.80	$2.20	$3.30	$2.40	$2.60	$2.60	$2.40	$2.30	$2.20	$2.10	$1.90	$1.70	$1.35	$1.00	$1.35
Mexia	1.55	1.80	1.90	2.00	2.10	2.20	2.00	1.90	1.80	1.70	1.60	1.50	1.25	1.00	1.35

*These prices were posted by the Magnolia Petroleum Co., but were not met by all major producing companies. Detailed information regarding these changes can be obtained from the table of chronological changes. ‡Light. †Heavy. §Texas Co.

*North and Central Texas—	Oct. 9	Nov. 9		Dec. 13	Dec. 27
The Texas Co.:					
Below 33°	$ .90	$ .75		$....	$ .90
32° to 39.9°	1.10	1.00	33° to 35.9°	1.00	1.15
40° and above	1.25	....	36° to 38.9°	1.15	1.30
			39° and above	1.30	1.40

	October		Dec.
	8	19	27
Humble Oil & Refining Co.:			
Below 30°	.90	.80	....
30° to 32.9°	1.10	.90	....
33° to 35.9°	1.20	1.00	....
36° to 38.9°	1.35	1.15	....
39° and above	1.50	1.30	....

*Previous to October there were other differences between the posted prices of The Texas Co., Humble Oil & Refining Co., Magnolia Petroleum Co. and Prairie Oil & Gas Co., as shown by the accompanying table of chronological changes. The change by The Texas Co. given above, effective December 27, applied to Oklahoma and Kansas, as well as North and Central Texas.

EASTERN AND MIDDLE WESTERN STATES

	January							February			April		May		June		July		Sept.	November		Dec.
	1	15	16	18	29	30	31	5	8	13	19	13	24	4	14	19	28	17	19	20	8	9	21
Pennsylvania	$2.25	....	$3.35	$3.45	$3.55	....	....	See below			....	....	....	....	....	....	....	....	....	....	....	....	....
Cabell	2.11	....	2.21	2.31	2.41	....	....	See below			....	....	....	....	....	....	....	....	....	....	....	....	....
Corning	1.75	....	2.00	....	....	2.15	....	See below			....	....	....	....	....	....	....	....	....	....	....	....	....
Lima	1.98	2.08	....	2.18	....	....	2.28	2.38	....	2.48	$2.58	$2.48	$2.38	$2.28	$2.18	....	$2.08	....	$1.88	$1.68	....	$1.43	$1.53
Wooster	1.90	2.00	....	2.10	....	....	2.20	2.30	....	2.40	2.50	....	2.25	2.15	2.05	1.90	....	1.80	1.70	1.50	....	1.35	1.40
Ragland	1.00	....	See below		....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Illinois	1.77	1.87	....	1.97	....	....	2.07	2.17	....	2.27	2.37	2.27	2.17	2.07	1.97	....	1.87	....	1.67	1.47	1.22	....	1.33
Indiana	1.78	1.88	....	1.98	....	....	2.08	2.18	....	2.28	2.38	2.28	2.18	2.08	1.98	....	1.88	....	1.68	1.48	....	1.33	1.33
Princeton	1.77	1.87	....	1.97	....	....	2.07	2.17	....	2.27	2.37	2.27	2.17	2.07	1.97	....	1.87	....	1.67	1.47	1.22	....	1.33
Plymouth	1.15	1.25	....	1.35	....	....	1.45	1.55	....	1.65	1.75	1.65	1.55	1.45	1.35	....	1.25	....	1.05	.85	....	.60	.70
Waterloo	1.25	1.35	....	1.45	....	....	1.55	1.65	....	1.75	1.85	1.75	1.65	1.55	1.45	....	1.35	....	1.15	.95	....	.70	.80
*Somerset light	2.15	....	2.25	2.35	2.45	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
*Somerset medium	1.90	....	2.00	2.10	2.20	....	....	See below			....	....	....	....	....	....	....	....	....	....	....	....	....
†Petrolia, Canada	2.38	2.48	....	2.58	....	....	2.68	2.78	....	2.88	2.98	2.88	2.78	2.68	2.58	....	2.48	....	2.28	2.08	....	1.83	1.93
†Oil Springs, Canada	2.45	2.55	....	2.65	....	....	2.75	2.85	....	2.95	3.05	2.95	2.85	2.75	2.65	....	2.55	....	2.35	2.15	....	1.90	2.00

	February				April	May		June	July	Sept.	November		December				
	1	3	8	15	11	3	14	19	10	20	13	14	14	21	22	26	28	31
Following prices were announced on February 1, 1923:																		
Penna Grade Oil in New York Transit Lines	$3.80	$3.90	$4.00	$4.25	$4.00	$3.75	$3.50	$3.25	$3.00	$2.75	$2.60	....	$2.85	....	....	$3.10	....	$3.35
Bradford District Oil in National Transit Lines	3.80	3.90	4.00	4.25	4.00	3.75	3.50	3.25	3.00	2.75	2.60	....	2.85	....	....	3.10	....	3.35
Penna Grade Oil in National Transit Lines	3.65	....	3.75	4.00	3.75	3.50	3.25	3.00	2.75	2.50	2.35	....	2.60	....	....	2.85	....	3.00
Penna Grade Oil in Buckeye Pipe Lines	3.65	....	3.75	4.00	3.75	3.50	3.25	3.00	2.75	2.50	2.35	....	2.60	....	....	2.85	....	3.00
Corning Grade Oil in Buckeye Pipe Line Lines	....	....	....	2.30	2.15	2.00	1.85	1.70	1.60	1.45	....	1.35	....	1.40	....	....	....	....
Cabell Grade Oil in Eureka Pipe Line Lines	2.51	....	2.61	2.76	2.41	2.16	1.91	1.71	1.50	1.35	1.20	....	1.35	....	....	1.45	....	....
*Somerset Medium Oil in Cumberland Pipe Line Lines	2.30	....	2.40	2.55	2.20	1.95	1.75	1.55	1.40	1.25	1.15	....	....	1.30	....	1.40	....	....
*Somerset Light Oil in Cumberland Pipe Line Lines	2.55	....	2.65	2.80	2.45	2.20	2.00	1.75	1.55	1.40	1.30	....	....	1.45	....	1.55	....	....
Ragland Grade Oil in Cumberland Pipe Line Lines	....	....	....	1.10	....	....	1.00	.90	.75	....	....	....	....	....	....	.85	....	....
Penna Grade Oil in Southwest Pa. Pipe Lines	3.65	....	3.75	4.00	3.75	3.50	3.25	3.00	2.75	2.50	2.35	....	2.60	....	....	2.85	....	....
Penna Grade Oil in Eureka Pipe Lines	3.65	....	3.75	4.00	3.75	3.50	3.25	3.00	2.75	2.50	2.35	....	2.60	....	....	2.85	....	....

*Somerset oil commands 6 cents over the above posted price †Plus Government bounty of 52½c.

NORTHERN LOUISIANA AND ARKANSAS

As Posted by Standard Oil Co. of Louisiana

	January				February			March		April			May			Aug.	Sept.	Nov.	Dec.
	1	3	18	26	30	3	12	17	18	28	13	20	24	3	7	14	3	10	15	29
Homer, Caddo, Haynesville and El Dorado Fields—																				
Below 30°	.75	....	.85	.95	1.05	1.15	1.25	1.35	....	....	....	....	1.25	1.15	1.05	.95				
30° to 32.9°	1.10	....	1.20	1.30	1.40	1.50	1.60	1.70	....	....	....	....	1.60	1.50	1.40	1.30				
33° to 34.9°	1.25	....	1.35	1.45	1.55	1.65	1.75	1.85	....	....	....	....	1.75	1.65	1.55	1.45				
35° to 36.9°	1.40	....	1.50	1.60	1.70	1.80	1.90	2.00	....	....	....	....	1.90	1.80	1.70	1.60				
37° to 38.9°	1.60	....	1.70	1.80	1.90	2.00	2.10	2.20	....	....	....	....	2.10	2.00	1.90	1.80				
39° and above	1.80	....	1.90	2.00	2.10	2.20	2.30	2.40	....	....	....	....	2.30	2.20	2.10	2.00				
Bull Bayou																				
32° to 34.9°	1.25	....	1.35	1.45	1.55	1.65	1.75	1.85	....	....	....	....	1.75	1.65	1.55	1.45				
35° to 37.9°	1.30	....	1.40	1.50	1.60	1.70	1.80	1.90	....	....	....	....	1.80	1.70	1.60	1.50				
38° and above	1.40	....	1.50	1.60	1.70	1.80	1.90	2.00	....	....	....	....	1.90	1.80	1.70	1.60				
Smackover	.30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....				
Smackover—																				
Below 26°	....	.30	.40	.50	.60	.70	.80	.90	See Below		....	....	....	....	....	....				
26° and above	....	.75	.85	.95	1.05	1.15	1.25	1.35	See Below		....	....	....	....	....	....				
Crichton	1.25	....	1.35	1.45	1.55	1.65	1.75	1.85	....	....	....	....	1.75	1.65	1.55	1.45				
De Soto	1.60	....	1.70	1.80	1.90	2.00	2.10	2.20	....	....	....	....	2.10	2.00	1.90	1.80				
Bellevue	.75	....	.85	.95	1.05	1.15	1.25	1.35	....	....	....	1.15	1.05	.95	....	.85				
Smackover—																				
Below 22°	....	....	....	....	....	....	....	....	.90	.80	.70	....	.60	See Below		....				
22° to 23.9°	....	....	....	....	....	....	....	....	1.00	....	.90	....	.80	See Below		....				
24° to 24.9°	....	....	....	....	....	....	....	....	1.10	....	1.00	....	.90	.80	.70	.60				
25° to 25.9°	....	....	....	....	....	....	....	....	1.20	....	1.10	....	1.00	.90	.80	.70				
26° and above	....	....	....	....	....	....	....	....	1.35	....	1.25	....	1.15	1.05	.95	.85				
Below 24°	....	....	....	....	....	....	....	....	....	....	....	....	....	.50	....	.40				

	Aug.	Sept.	Nov.	Dec.
	3	10	15	29
Caddo—				
Below 32°	.95	.75	....	.90
32° to 34.9°	1.30	1.10	.90	1.05
35° to 37.9°	1.35	1.15	1.00	1.15
38° and above	1.45	1.25	1.10	1.25
Homer—				
Below 31°	.95	.75	....	.90
31° to 32.9°	1.30	1.10	.90	1.05
33° to 34.9°	1.35	1.15	1.00	1.15
35° and above	1.45	1.25	1.10	1.25
Haynesville—				
Below 32°	1.20	1.00	.90	1.05
33° above	1.30	1.10	1.00	1.15
El Dorado—				
Below 32°	1.30	1.10	1.00	1.15
32° and above	1.45	1.25	1.10	1.25
Bull Bayou—				
32° to 34.9°	1.20	1.00	.75	.90
35° to 37.9°	1.25	1.06	.90	1.05
38° and above	1.35	1.15	1.00	1.20
Smackover—				
Below 24°	.40	....	....	.55
24 to 24.9°	.60	.50	....	.65
25° to 25.9°	.70	.60	....	.75
26° and above	.85	.75	....	.90
De Soto	1.45	1.25	1.10	1.25
Crichton	1.10	.70	....	1.00
Bellevue	.85	.75	....	.90

MEXICAN CRUDE

Prices on Mexican crude are not posted but are based on contracts. The dates of changes as given in the table below refer to the first issue of The Oil and Gas Journal in which they appeared.

	Jan.	Feb.		April	June	July	August			Sept.	Nov.	Dec.
	1	11	22	5	14	5	12	23	30	13	1	20
*Tuxpam (Mexican ports)	1.35	....	....	....	1.35	....	....	....	....	1.00	.80	....
†Panuco (Mexican ports)	.90	1.00	....	....	.90	.75	....	....	.45	.55	.50	.65
Tuxpam (New York)	1.85	2.00	1.87	2.08	....	....	1.99	1.91	....	1.55	1.34	1.31
Panuco (New York)	1.30	1.60	1.42	1.64	1.54	1.39	1.30	1.17	1.00	.97	.93	1.00
*Plus tax of	.2023	.2598	....	....	.313	....	....	....	....	.3034	.2923	.2669
†Plus tax of	.1121	.1672	....	....	.1726	....	....	....	....	.1693	.1669	.1665

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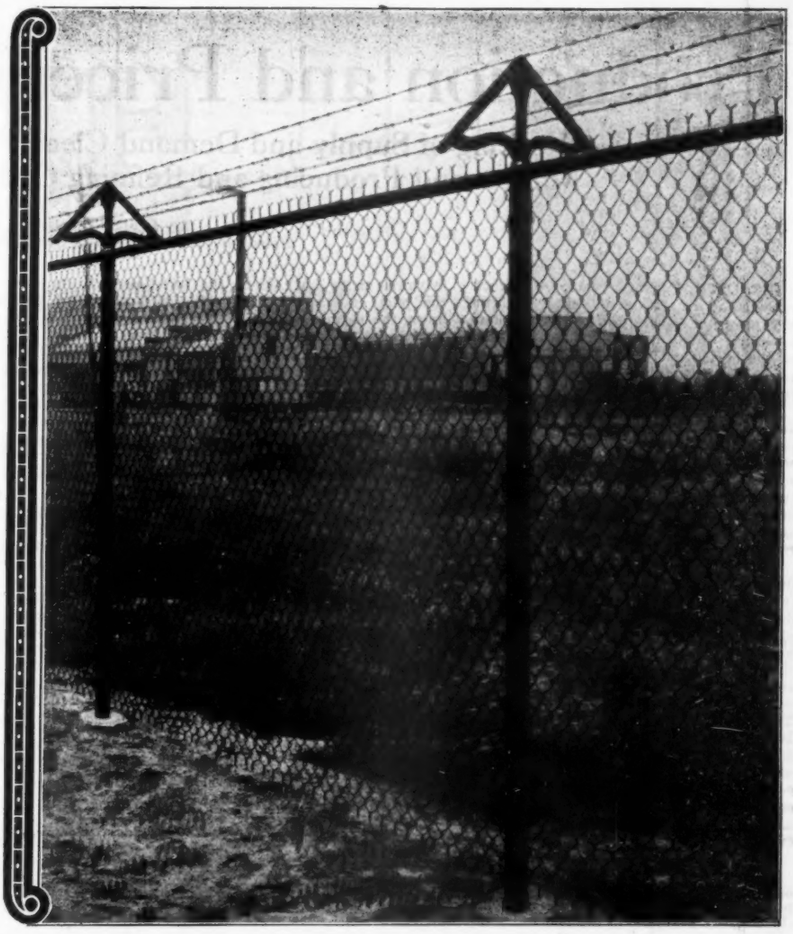

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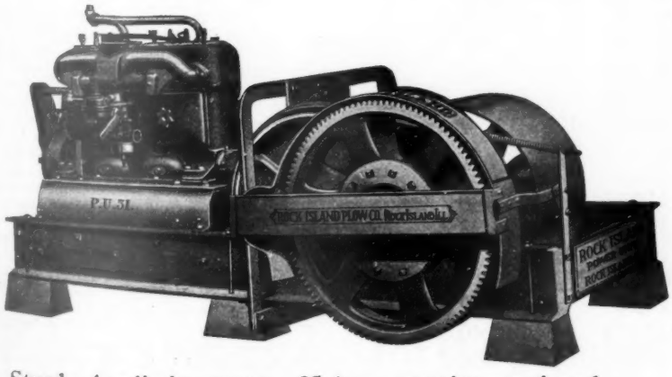

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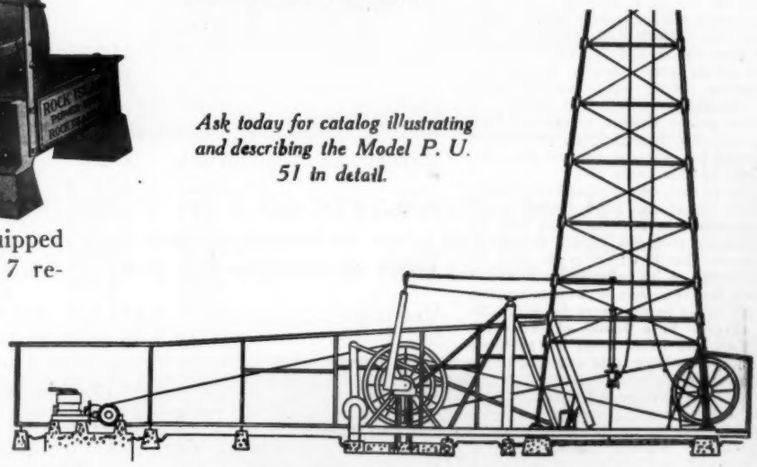

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Production and Prices in Eastern Field

Working of Supply and Demand Clearly Shown in Fluctuations of Market and Producing and Refining Operations During Past Year

By George Turnbull
Petroleum Statistician, The Oil City Derrick

OIL CITY, Pa., March 17.—One good evidence of the manner in which the laws of supply and demand control the markets for crude oil and its products is furnished by the developments in the Pennsylvania grade oil producing fields during the past year.

For the first time in months the producer is now selling his crude oil freely, practically all of the current production being offered to refiners. This is the result of a stabilization for a time of the crude oil price market and the belief of many that the peak in the price of Pennsylvania oil for the time being has been reached.

It is only a short time since the producers were holding their oil because they felt higher prices were in prospect. Producers in this section served by the lines of the National Transit Co. were then holding about 75 per cent of all the crude they produced in pipe line storage. The result was the refiners could not obtain sufficient crude to operate their plants. The independents offered a premium of 10 cents a barrel above the posted price for crude oil. This did not attract much oil into the market, but the independent refiners could not go much higher on account of the competition they met in the sales of products from other grades of crude oil.

Bradford as Example

Another good example of the workings of the law of supply and demand is found in the Bradford Field where crude has come to be worth 50 cents a barrel more than in the remainder of the Pennsylvania territory, simply because the demand for it is great. The independent refiners there have found it more profitable to pay a higher price for Bradford district crude than to transport West Virginia oil northward.

So long as the supply offered for sale in this territory was less than the demand, there were premiums amounting to 10 cents a barrel offered to attract the producer. But lately with the producers again offering their production for sale, the supply has caught up with the demand and the premium market has ended. A month or two ago, even, the premiums failed to attract enough crude oil and refiners were forced to curtail their operations to 50 and 60 per cent of normal because of the lack of sufficient crude. Today, with the producers selling their output, the refiners can obtain all the crude they desire and can operate their plants at as near capacity as weather will permit. More than a score of thousand producers control the output of crude oil in the eastern territory. This being the case, how can one concern or any group of concerns control the market price of this crude oil?

Not more than one-third of every barrel of crude oil of the Pennsylvania grade can be made into gasoline, even with all the cracking processes in full operation. This means that if all the crude price increases were to be reflected only in the gasoline market, then a 2-cents-a-gallon advance would be necessary for every 25-cent advance in a barrel of crude oil. And there are times when all advances in crude prices have to be reflected in the gasoline market.

Necessity for Advances

There have been a number of good sized advances in the price of Pennsylvania oil this winter. These, of course, have been reflected in the gasoline market. Pennsylvania crude oil has been advanced from $2.35, which prevailed during parts of November and December of last year to the $4 quotation of the present day. This rapid increase in the price of Pennsylvania crude has led to the belief on the part of many persons who do not know the details concerning the oil business that the Pennsylvania oil producer is now receiving a fancy price for his oil. This is far from being the case. Statistics prove that now, for the first time in months, the Pennsylvania producer is receiving a price for his oil which will barely meet the costs of production. For months he has been operating a losing game. He has been engaged in a business which would have failed in the end if production had not suddenly declined in the West and afforded him relief in the shape of higher prices. The wolf of business failure had been knocking on his door for months and it had begun to appear as though the collapse of the Pennsylvania producing industry was certain. If this industry were to fail, then the world would be deprived of the very finest grade of lubricating oil it is possible to buy.

It costs money to drill in the stripper territory where the high grade Pennsylvania crude is to be found. To go about 1,000 feet an expenditure of more than $2,100 generally is necessary. Then, when the investment has been completed; when the money has been turned into a hole in the ground, the most that can be expected is an extremely small oil well, which in most cases would not have an initial production of more than one barrel a day. To furnish the element of risk to the proposition, we frequently find dry holes listed among the reports.

Cost of Producing

It also costs money to bring the oil to the surface after the wells have been completed and put on production. Some time ago the Pennsylvania Oil & Gas Men's Association secured the cost figures from the various fields of Pennsylvania and found that the cost varied from $3.75 per barrel in Forest and Greene Counties to $4.25 a barrel in Warren and Washington Counties. Venango County came about half way between with a production cost of $4.02 per barrel. These figures represent the cost of producing oil in western Pennsylvania and replacing the investment. However, they include nothing for the interest upon the invested capital. Six per cent return on the value of the property would result in an added expense of more than 80 cents a barrel. This would make it come to pass that producers in some sections might get along with a figure of $4.50 to $4.60, while Washington and Warren County producers would have to have at least $5 a barrel. Surely the oil producer, with all the risk he runs, is entitled to the same interest return that he would secure from a good real estate mortgage, upon which he would have absolutely no risk.

Is not the above a real argument against those who complain about present prices for oils? Think of it, despite all the recent advances in crude oil prices, the average producer of the highest grade oil in the world—Pennsylvania—is not securing as much from his investment as he would have done if he had placed the money in a good real estate mortgage. He had real risks to run in order to secure his production. He was constantly faced with the possibility of a dry hole, and if he drilled many wells he secured one of them, giving him absolutely no return on all the money he had placed in it.

Operating at a Loss

For several years now, the Pennsylvania oil operator has operated his business at a loss. Last year the average price of Pennsylvania crude was a little under $3.10. In 1922, the average price of Pennsylvania oil was $3.17½. Those who attack the oil industry for the recent increases in prices should stop for a moment and consider what would happen to the Pennsylvania grade producer if the price of his product should be fixed at a lower quotation than prevails today. He would speedily quit the business. All that keeps him in it now is the hope which he holds for better conditions and higher prices in the future.

Think for a moment as to what would happen if all Pennsylvania oil were to be suddenly withdrawn from the market, but think about it from the standpoint of the consumer and not the producer of some other grade of oil. It would decrease the daily average production of crude oil in the United States by only about 45,000 barrels and in this manner would directly affect the consumers of all grades of oil by decreasing the supply without cutting down the demand. It would be a severe blow to many communities in New York, Pennsylvania, West Virginia and southeastern Ohio which are maintained largely by the oil industry. But the greatest effect of all would be the loss of a crude oil from which the very finest of lubricants are made, the very best crude petroleum that is produced in the United States. Crude oil prices such as have prevailed during the past two years would, if they were continued into the future, in the end sound the death knell of the Pennsylvania petroleum producing industry, for no business will continue which is continually writing off losses.

Gallons Instead of Barrels

The accompanying table shows the production statistics for Pennsylvania for 1922 and 1921 by counties and should prove of value to the oil industry when it pleads its case at Washington. The general public has heard about the big gushers which made certain people fortunes over night. It has heard very little, however, about the stripper wells in the Eastern Fields, whose output could well be mentioned in gallons instead of

Counties—	Year	Production barrels	Total No. of prod. wells Dec. 31	Av. annual prod. per well barrels	No. new wells brought in	No. old wells abd.
Allegheny	1921	598,480	1,984	301.7	132	83
	1922	574,552	1,970	291.7	145	148
Armstrong	1921	24,807	196.	126.6	9	7
	1922	24,788	197	125.8	6	6
Beaver	1921	125,795	869	144.8	41	35
	1922	117,914	892	132.2	83	69
Butler	1921	874,878	5,943	147.2	286	182
	1922	825,366	6,025	137.0	338	243
Clarion	1921	230,044	2,403	95.7	118	84
	1922	212,206	2,390	88.8	86	59
Crawford	1921	48,298	990	48.8	46	0
	1922	48,406	1,058	45.8	22	0
Elk	1921	116,432	1,132	102.9	9	2
	1922	109,244	1,142	95.7	23	0
Forest	1921	96,033	1,545	62.2	22	45
	1922	87,226	1,516	57.5	18	7
Greene	1921	413,163	1,504	274.7	33	14
	1922	317,343	1,267	250.5	21	5
Jefferson	1921	413,163	171	77.3	1	9
	1922	10,036	163	61.5	1	1
Lawrence	1921	31,736	366	86.7	5	1
	1922	31,825	385	82.7	15	0
McKean	1921	2,311,662	19,328	119.6	634	258
	1922	2,466,723	21,258	116.0	902	609
Mercer	1921	14,795	384	42.5	5	28
	1922	12,954	324	40.0	6	7
Potter	1921	13,612	271	50.2	0	0
	1922	13,375	271	49.4	0	1
Tioga	1921	10,095	78	129.4	2	0
	1922	8,779	80	109.7	0	0
Venango	1921	1,454,528	25,772	56.4	498	349
	1922	1,360,093	26,271	51.8	641	577
Warren	1921	342,640	5,699	60.1	213	197
	1922	516,781	6,266	82.5	341	137
Washington	1921	531,117	2,039	260.5	42	22
	1922	499,893	2,016	248.0	18	50
Westmoreland	1921	150	1	150.0	0	0
	1922	233	1	233.0	0	0
Total	1921	7,251,476	70,639	102.7	2,096	1,316
	1922	7,237,737	73,492	98.5	2,666	1,919

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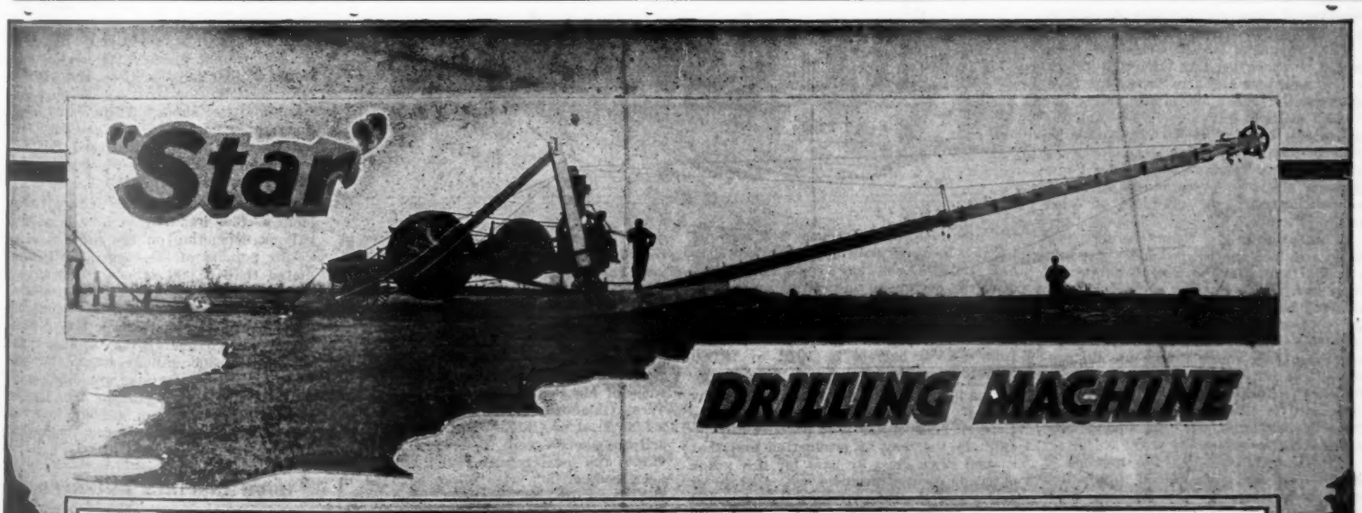

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barrels, and of the dry holes which the seeker after oil is certain to encounter at some time in his career.

Production Falling

The amount of crude oil produced by the wells in this section is extremely small. Some of them should be measured by gallons instead of barrels. Few start off at more than a barrel and then they decline rapidly for a time. In Pennsylvania, for instance, the number of producing wells during 1922 was 73,492, while the production for that year amounted to 7,237,737 barrels. This is an average yearly production of 98½ barrels per well. In other words, the average oil well's production in the State of Pennsylvania during 1922 amounted to 27,100 barrels per day. This average production of the wells is steadily declining, too. In 1921 the average output for the year per well was 102.7 barrels, while in 1922 it had slumped to 98½ barrels. In 1922 the smallest initial production for the wells of any county was in Mercer County where it amounted to only 40 barrels.

The gross income from these average producers in the State of Pennsylvania is ridiculously low. At the present price of $4 a barrel, the total amount of money which will be realized by the average producer in an entire year was $394. Yet some people in this country believe that every oil man is a wealthy man who has an investment which yields him an extravagantly high rate of income for the amount of money outlaid. And some politicians would try to impress this belief in the minds of the public.

This Pennsylvania oil producing industry should by all means be encouraged. This grade of crude is recognized as the quality oil of the world. In addition, the wells can be depended upon and therefore exert a stabilizing effect on the entire industry. The great and rapid changes in production which are possible in the gusher fields of the Middle West can well be illustrated by the stories of Mexia and Powell. The Eastern fields furnish no sensational rises and declines in production. They are simply steady producers.

The producers of the Eastern fields cannot be encouraged by low crude prices, which represent to them losses for their operations. Only low crude prices are possible without advances in gasoline and oil prices over those which prevailed some of last year. For it must be remembered that the man who refines Pennsylvania oils sells his products in active competition with the products of other grades of crude.

A higher price for Pennsylvania crude oil is required for the producer to make a profit than was the case a number of years ago. For one thing the general cost of living has increased. The oil man has had to foot a part of this bill. It costs more to drill now, the pumper gets larger pay, everything which enters into the production of oil costs more today than it did then. Another reason that must be considered is that the average output of these Pennsylvania grade producing wells is declining from year to year.

The manner in which the number of completions and the initial production credited to them in the Eastern fields have been falling off during recent years in shown in the following table covering the Eastern fields—New York, Pennsylvania, West Virginia and southeastern Ohio, from 1916 to the present date:

Years—	Wells Comp.	Production
1916	6,229	44,589
1917	5,435	35,569
1918	4,414	32,095
1919	5,178	40,095
1920	5,718	36,874
1921	4,115	20,437
1922	4,917	27,236
1923	4,528	18,060

Steady Decrease in Wells

With the exception of the years 1919 and 1920, when the prices paid for crude oil were exceptionally high, the above table shows a steady decline in the number of wells completed in this territory. The influence which the crude oil price has upon drilling operations is illustrated by the increase in completions in 1919 and 1920. Even more pronounced has been the decline in the initial production credited to the completions each of these years with the exception of 1919 and 1920. This set of figures has declined from 44,589 barrels in 1916 to 18,060 barrels last year.

The figures which have been given show that it costs money to operate in the Eastern fields if one is to produce any results in the way of production and that a good price must be paid for this grade of crude or the producer will operate at a loss and the Pennsylvania industry will be doomed to destruction.

In order that there may be a good price for Pennsylvania crude oil, there must also be a good price for its products. The refined field is a most competitive one in this district and it has been found by experience that the price paid for gasoline at refineries in other territories had a direct bearing upon the quotations in the local selling zone. Last year was a good example of this. In order to operate without a loss the Pennsylvania refiner found that he needed a certain price for his gasoline. California gasoline was coming in by way of the Eastern Coast and was taking away all of his New England, most of his New York, and some of his Pennsylvania trade. On the West Oklahoma gasoline was being sold as far East as Ohio. So if he wanted to sell anywhere except in western Pennsylvania, the local refiner found himself in keen competition with those engaged in the same line of business from other States.

Gasoline Cost Follows Crude

The manner in which gasoline has been influenced by the price of crude oil in the past is shown by the following table which gives the prices of Pennsylvania crude oil and 58 gasoline at Pennsylvania refineries:

1923—	Jan. 1	Feb. 1	March 1	April 1	May 1
Pa. crude	$3.25	$3.65	$4.00	$4.00	$3.75
58 gasoline	.14¾	.15½	.17¼	.16¾	.15

	June 1	July 1	Aug. 1	Sept. 1	Oct. 1	Nov. 1
Pa. crude	$3.25	$3.00	$2.75	$2.75	$2.50	$2.50
58 gasoline	.14½	.13¾	.12¼	.12	.11¾	.10¾

	Dec. 1	Jan. 1, 1924	Feb. 1, 1924
Pa. crude	$2.35	$3.00	$4.00
58 gasoline	.10	.10¼	.15

The above prices show the great influence that crude oil prices have over gasoline quotations, and as the crude market is a competitive one and based on the laws of supply and demand, so also is the refined market.

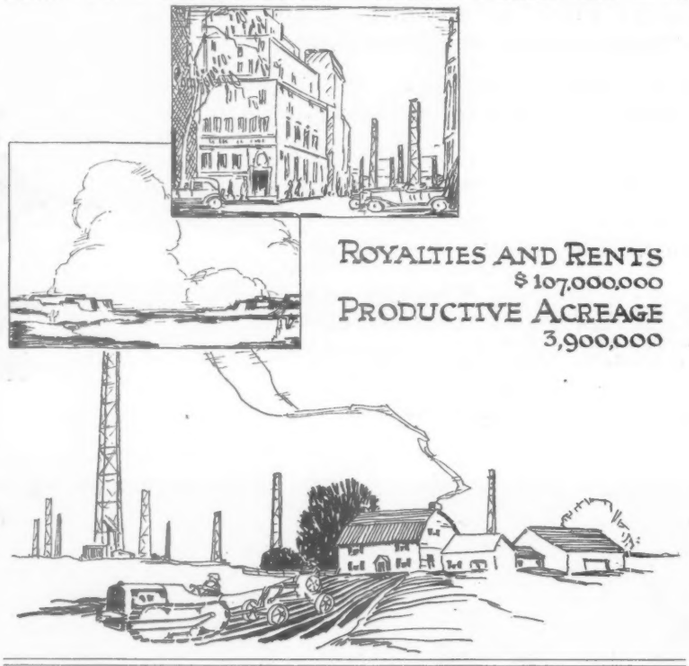
PROSPERITY FOLLOWS IN THE WAKE OF ENTERPRISE OF OIL INDUSTRY

The enterprise of the oil industry has built towns and cities throughout the country where once existed only poverty and desolation. Oil put Oklahoma on the map; it is making Texas, Louisiana and Arkansas prosperous. It has directly brought wealth and progress to 17 States where oil has been found and developed, and its benefits as an essential to modern progress have been countrywide. In the past year it gave California an experience that made the boom days of '49 seem tame in comparison.

The oil producing industry pays annually to the farmer and the land owner $107,000,000 in royalties and rentals. This is the latest figure available—for 1919—and probably the sum is now much greater. The oil man takes the risk. He makes the investment. Often he pays big bonuses for his leases. He makes the entire investment. If he wins oil, the lessor shares. If he loses the oil man foots the whole bill. At the end of 1921 there was an estimated productive oil acreage in this country of 3,900,000 acres. The annual drilling campaign of the oil industry involves the complete development of probably 100,000 acres each year.

Oil adds to taxable values. The famous Ranger Field, in Eastland County, Texas, developed in 1918 and 1919, came in at a time when an exodus of population was in progress due to the arid country and a long drought. People could not sell their farms.

In 1917 the assessed value of all property in Eastland County was $11,000,000. In 1920 it was $58,000,000. This increase was the result of investments in connection with and arising out of the development of oil. No better farming conditions existed in 1920 than in 1917 and no other industry was developed. On the other hand, Eastland County was an unprofitable venture for the oil industry. Millions of dollars more have been spent in the county by oil operators than can ever be expected to return to them.



Storage Gasoline Outside Refineries 465,000,000 Gallons

Slightly less than a half billion gallons of gasoline are stored at wholesale and retail distributing stations throughout the United States to assure gasoline consumers an adequate supply at all times. This is an estimate based on available figures covering the number of service stations, bulk stations and other distributing agencies in a substantial part of the consuming area of the United States.

Government reports cover only gasoline in storage at refineries and no official figures have ever been compiled giving the total gasoline in storage at the bulk and service stations which must at all times have a supply on hand adequate to meet the demands of the consumers pending shipments from the refineries. The estimate of 465,000,000 gallons of gasoline on hand at bulk stations, service stations and other places where gasoline is retailed is based on reports covering the actual number of stations in approximately 50 per cent of the consuming area of the United States. From the actual figures on the number of stations in this area it was possible to arrive at an approximate figure for the entire United States.

According to this estimate there are at the present time 24,000 service stations, 27,000 bulk stations and 110,000 other distributing agencies including garages and tire shops. There was a large increase in both wholesale and distributing agencies during 1923 and this accounts for the estimates which are higher than those made in 1922.

Although bulk stations storage varies from a few hundred to over a million gallons depending on the size and marketing policies of the company it is estimated that 15,000 gallons represents an average storage total for all stations. Service station storage also varies but from available information 600 gallons would approximate the average. An average of 300 gallons storage for the remaining retail stations would be representative of all parts of the United States. Based on an average value of 20 cents a gallon this storage represents an investment of $93,000,000.

HOPE INSPIRES ENTERPRISE

Any attempt at price regulation and Government control of the industry will destroy the incentive for searching for new pools and eliminate the small operator from business. Every individual operator in the business is induced to go into it and impelled to stay in it because of its speculative character.—W. H. Gray, President of National Association of Independent Oil Producers.

EFFECT ON SMALL PRODUCER

As to the effect upon the small producer who has production, it is my firm and fixed judgment that if the Government should undertake to regulate the prices that he should receive he will most certainly sell his properties to the larger companies which would put all the refiners without production out of business.—W. H. Gray, President Association of Independent Oil Producers.

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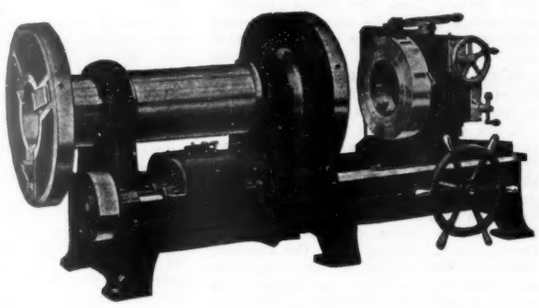

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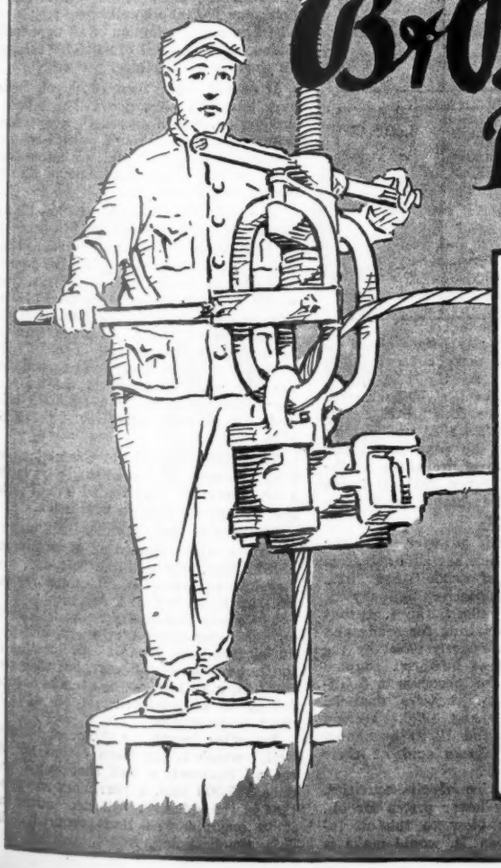

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Securities Reflect Crude Production

Quotations Show How Oil Companies Had to Bear Immense Burden of Caring for Surplus Output During Period of Low Prices

By N. O. Fanning

NEW YORK, March 17.—In the supplying of petroleum products to the people and the industries of the United States, representatives of the American oil industry have in their keeping a tremendous trust, a sacred responsibility which most of them fully appreciate. Their job is not only to supply the current oil demands of their country but to provide for the future. In order to do both of these tasks efficiently they must be willing to toil early and late, to study all phases of the business and to take risks.

The driller of oil wells who sticks to his task conscientiously—the "roughneck" who handles the work on the floor of the derrick day in and day out, is just as much a servant of his country as the congressman who has been elected and receives a stipend to watch and care for the interests of his fellow citizens in Washington.

The oil field superintendents, the office managers of oil companies, the office workers, and the directors all are public servants, having a part, along with the "roughnecks" and the drillers.

The banks that loan oil companies money when they need it, the army of investors, large and small, who put their funds in legitimate oil enterprises, also perform a service to their country, for the welfare of the oil industry depends on adequate capital.

Oil Industry's Problems

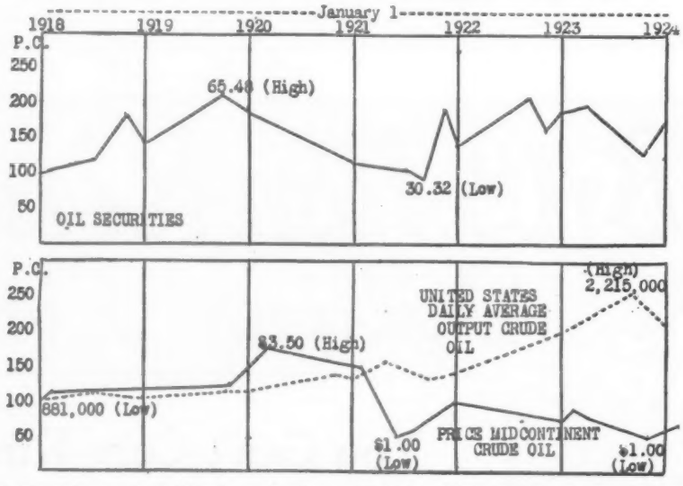
The situation or problems facing the oil business can best be illustrated by the accompanying chart, showing the trend of oil prices, oil security prices and crude oil production in the United States since January 1, 1918. It is not fair to compare the oil business now with the business prior to 1918, as it has doubled in size and has changed largely in numerous aspects, such as refining methods, means of transportation and sources of crude oil.

The outstanding development in the oil business during the six years under review is that of having to operate on a lower margin of profit for the producer of crude oil. This is clearly shown in the chart, in the line representing the price of Mid-Continent crude oil. From $2 per barrel on January 1, 1918, the price advanced steadily until it reached $3.50 early in 1920, which is the high price for all time. From that point it declined steadily reaching a low of $1.00 per barrel in 1921. Since that time it has sold consistently below the January 1, 1918, level, reaching $2 only on one occasion—the beginning of 1922. In 1923 it again touched the low point of $1 per barrel. The average price since the middle of 1921 would be about $1.50 per barrel.

As for the refiner, he has passed on the low price of crude to the consumer in the form of lower prices for gasoline and other petroleum products, so that these products have sold below the high 1920 levels ever since that year. For instance, gasoline, tank wagon basis, is now 20 cents per gallon at New York, against 31 cents in 1920. The refiner has the advantage over the producer, however, in that he can adjust his refinery prices in relation to the cost of crude and transportation so as to save some profit. The producer has to take what the market will bring, and the owner of large wells, who can afford to take a smaller price per barrel, has a big advantage over the owner of small but settled wells. As to the refiner, he must take the crude which costs the least, irrespective of the welfare of the small producer; it is only in this manner that he can supply refined oil cheaply.

However, another glance at the chart will show that the production of crude oil has steadily risen since the beginning of 1918, which accounts for the steady decline in prices only because consumption has not kept up with the gain in output over a period of years. Hence, we have stocks of crude in excess of 300,000,000 bbls. now, against not much over 100,000,000 bbls. on January 1, 1918.

Who has to finance the increase in stocks? It so happens that the largest producers during the last few years, and the companies having to finance the storage, are the refiners themselves. For instance, the Standard Oil Co. of New Jersey is said to have had to produce and store some 10,000,000 bbls. of Powell crude oil within a period of six months at a cost of around $10,000,000. Such companies as the Standard Oil Co. of California, the Shell Union Oil Corp., Union Oil Co. of California and other California refining companies have been face to face with the necessity of financing large stocks of crude over their current requirements.



Securities Prices Significant

The meaning of all this is that oil companies have as a whole had to bear the record surplus of oil during a period of low prices. This has been a common occurrence in the oil business at odd times throughout its history, and the sound oil companies therefore arrange their prices and finances accordingly.

For instance, a burden of $10,000,000 in the case of its Powell crude, was carried by the Standard Oil Co. of New Jersey without public financing. This signifies that the stocks accumulated in that field were financed out of the company's surplus (we speak of Humble Oil & Refining as a subsidiary of the New Jersey company). On January 1, 1923, the Standard Oil Co. of New Jersey had a profit and loss surplus in excess of $250,000,000.

A company not having funds of its own to finance large stocks of crude must borrow from the banks privately, or through the banks must raise money from the public in the investment market. In either case the money is coming originally from the public who have either put surplus funds in the bank, or put their money in securities direct.

It is plain that in order to borrow money, the oil companies must have credit, or, in other words, earnings more than sufficient to pay interest charges on the money borrowed. Such borrowings are often represented by bonds or notes, but often by issues of common or preferred stock. Either way, the common and preferred stocks of the companies are affected, inasmuch as interest on bonds means proportionately less for dividends on these stocks.

The trend of oil securities, as shown in the chart, has a direct bearing on the welfare of the oil business. When oil stocks are selling at comparatively low levels, it is more difficult to raise money in the investment market, either for financing of storage, or of additional refining, transportation or morketing facilities.

Oil stocks can only be kept up by the payments of dividends. The chart shows that the peak of oil securities prices was reached in 1919, shortly before crude oil prices reached their peak, but coincident with the beginning of the rise in oil prices to the peak level. Then occurred a sharp fall in securities until a low point was reached in 1921 more than 50 per cent below the peak level, and slightly below the level prevailing at the beginning of 1918. Since 1921 oil stocks have generally sold at higher levels than existed in that year.

It will be noticed, however, that the trend of oil securities has differed from that of the price of crude since 1921, based on their respective January 1, 1918, levels. This reflects the fact that the lower prices prevailing for crude and refined oil have been partly offset by the increase in volume of business, coupled with the fact that the increases in facilities to take care of it were financed largely during 1919 and 1920. During that period, (1919 and 1920) as shown by the chart, oil stocks sold at their highest levels.

A drop in the price of oil securities, which would follow lower prices for oil, would be a severe blow to the oil industry, inasmuch as it would make it difficult not only for the oil companies to continue to finance large stocks without draining their own surpluses, but also to finance continued expansion necessary to supply the growing needs of consumers of oil products.

On the other hand, such financing can be managed from earnings, provided prices for oil products are high enough—at least a dollar a barrel higher than they are at present.

Another Serious Factor

Low prices for oil products would, therefore, make it more difficult for the oil business to raise money for needed expansion but they would also hurt the oil industry in another respect. They would bring about, inevitably, lower production of crude oil, and this would result ultimately in a shortage of oil.

The oil industry, with present stocks of crude on hand of around 300,000,000 bbls., is in a much safer position than with 100,000,000 bbls., both from its own and the consumers' viewpoint. A surplus of oil is much more sound, fundamentally, than a shortage.

The oil industry should therefore fix prices in such a way as to maintain sufficient stocks of oil, to guard against a shortage due to underproduction of crude, and to enable it to maintain its credit so that it can carry on the expansion which is steadily in progress.

EFFECT OF NEW OUTPUT ON NATION'S PRODUCTION

In all the fields of the United States last year 16,206 oil wells were completed. The first-day production of all these wells added makes a total of 6,015,100 bbls., or an average of 371 bbls. per well.

It would seem that 16,206 oil wells, averaging 371 bbls. per well in first-day production, would exercise a tremendous influence on the nation's general oil production, and so they did for a time, but not to the extent one outside the industry might imagine.

The total production of the United States in 1922 was 563,882,878 bbls. It is reasonable to estimate that had no wells been completed in 1923, the production would have declined 20 per cent, which would have made the total production in 1923, 451,106,302 bbls. But the completion of 16,206 oil wells sent the production up to a total of 738,877,176 bbls. for 1923, so it may be assumed that the new wells produced through the year the difference between 451,106,312 bbls. and 738,877,176 bbls., or 287,770,864 bbls.

The 16,206 new oil wells, assuming that they averaged 182.5 producing days in the year, therefore contributed 17,757 bbls. per well to the gain in production.

It appears, then, that the 1923 crop of oil wells, which started off at an average of 371 bbls. per well the first day, produced an average of 96.2 bbls. per day per well up to New Year's day.

The above figures are theoretical, based on the assumption that every well produced from the time it was brought in until the close of the year, but they give the reader an idea of the average natural falling off of production of oil wells in their early stages.

In other words, a "thousand-barrel-well," which might mean to one outside the oil business, a well that would produce 365,000 bbls. a year, does not mean that in the industry. Oil men understand it to mean a well that produced 1,000 bbls. the first day.

AIROIL PRODUCTS

Note

We Suggest—
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Here Are Some Outstanding Constructional Features of the McCord Lubricator—

Each unit has independent adjustment and can be easily removed from the reservoir without disturbing the set regulation of the other pumps, or removing the reservoir from the engine base.

All pump units are made of the finest forged bronze obtainable, and run constantly in oil.

Every pump is tested against 2000 pounds pressure.

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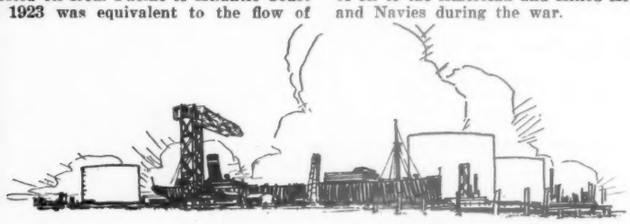
TANK STEAMERS OF SEVEN SEAS CARRY OIL TO ENDS OF THE EARTH

Tank steamers are the "water pipe lines" for oil. Large fleets of tankers move crude oil from pipe line terminals to coastal refineries and refined products from refineries to marketing centers.

Late in 1922 a great new source of oil supply was developed in southern California. Practically overnight tankers formerly in Mexican and other services appeared in Los Angeles Harbor and loaded oil for Atlantic Coast points. In the space of several months fleets of tankers were carrying oil with clock-like regularity through the Panama Canal to the Eastern Seaboard—a distance of some 4,900 miles, taking over 40 days for the round trip. Due to the tanker, these remote oil pools could be developed and the oil made available to consumers in all parts of this country as well as in foreign countries. The rate in which tankers carried oil from Pacific to Atlantic Coast in 1923 was equivalent to the flow of eight land trunk pipe lines pumping oil at capacity.

Most of the tank steamers under the American flag are owned by oil companies. The Shipping Board has a fleet of tankers, many vessels of which are chartered by American oil companies. In the development of the tanker, the oil industry has made a notable contribution to the revival of America's marine prestige and to the country's position in foreign trade.

In 1914 there were only 55 tankers, with a gross tonnage of 201,160 tons, in the American merchant marine. The increase of 190 vessels, aggregating 1,022,551 gross tons, in 1919 and to 393 vessels, totaling 2,356,997 tons in 1923, is, in large part, a reflection of the tremendous accomplishment of the oil industry in supplying carriers for the transportation of oil to the American and Allied Armies and Navies during the war.



Year	Number	Gross Tons
1914	55	201,160
1919	190	1,022,551
1923	393	2,356,997

PIPE LINES ACROSS CONTINENT TRANSPORT OIL TO COAST CITIES

The development of the pipe line by the petroleum industry has in its relation to the elimination of waste and the reduction in cost in connection with transportation, resulted in great benefits to the consumer of petroleum products. Without this Napoleonic organization of the pipe line service the boon of petroleum could not have been adequately utilized by humanity at large, according to authorities.

Oil from the Mid-Continent Field in Texas and Oklahoma is transported in great trunk line systems traversing the continent to refineries in New York, Bayonne, Philadelphia and Baltimore. Other lines transport Mid-Continent oil to Gulf Coast refineries and to Gulf Coast terminals for loading on tankers which in turn carry the oil to Atlantic Coast refineries.

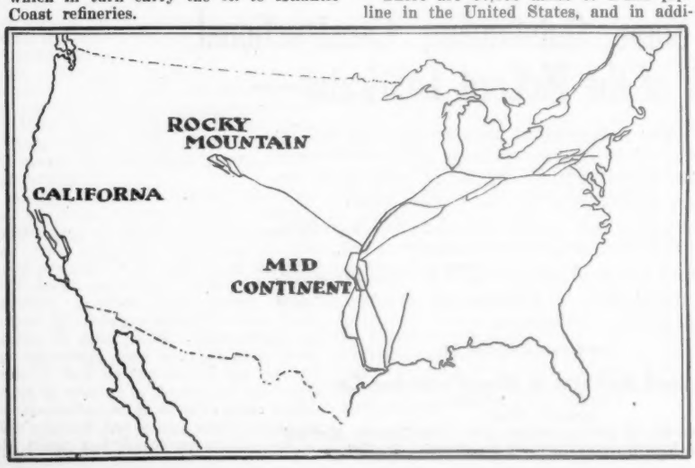
The completion of a great trunk line from Wyoming in the Rocky Mountain Field to connect with the trunk line systems running from the Mid-Continent Field to Middle Western and East Coast refineries constitutes another important link in this "buried railroad."

Pipe lines from the California fields connect with Pacific Coast refineries and with terminals from whence the oil is shipped by tanker to Gulf Coast and Atlantic Coast refineries.

The pipe line is an evolution of the old wagon train service in the Pennsylvania fields in the early days of the industry. Practically all crude oil produced is now carried by pipe line, some only a short distance and some oil as far as 1,700 miles.

There are 60,000 miles of trunk pipe line in the United States, and in addition there are thousands of miles of gathering lines; that is, short lines connecting the individual oil wells with lateral and trunk lines. The operation of the pipe line resembles railroad operation. Private telegraph and telephone systems follow the line,; the line walker corresponds to the track walker; every hour each tank at each of the pump stations is gauged for the quantity of oil which has been pumped in and each station advises back stations of the amount of oil received from it and advises the forward station of the amount of oil pumped to it. This in a way corresponding to the work of dispatchers.

Interstate pipe lines are common carriers under the common carrier law and are under the regulation of the Interstate Commerce Commission. In many States intrastate lines are common carriers subject to supervision of a State commission.



A LITTLE STRAND OF WIRE

A barbed wire fence has been known to separate a producing oil well from a dry hole.

GROWTH INVITED COMPETITION

The period of greatest growth and expansion in the oil industry has been in an era which witnessed the birth almost daily of new competitors and of almost phenomenal development of the power and strength of new units in the industry. That was due to the fact that the uses and consumption of petroleum products were multiplying so rapidly that any undertaking soundly established and efficiently conducted would sooner or later perforce find a place in the world's petroleum markets.—A. C. Bedford.

MORE OIL; LESS TO BE FOUND

The increasing amounts of oil being produced year by year and the overproduction that has occurred, does not indicate that the unmined reserves are greater than first estimated, but rather that methods of finding are improving more rapidly than consumption is increasing. But this improvement should not cause us to forget that every field opened makes exactly one less that can be found.—E. W. Marland.

PETROLEUM REFINING RANKS SECOND AMONG MANUFACTURING INDUSTRIES

The petroleum refining industry ranks second among manufacturing industries in the value of products, according to the Census Bureau's report for 1921. It is only exceeded by the slaughtering and meat packing industry. According to Census Bureau classification, automobile manufacturing is third in rank and foundry and machine shop products are fourth.

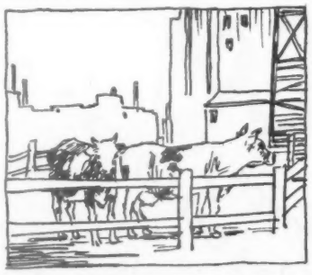
The petroleum refining industry jumped in two years from seventh to second place. The 1919 census showed slaughtering and meat packing first, iron and steel works and rolling mill products second, automobiles third, foundry and machine shop products fourth, cotton goods fifth, flour mill and grist mill products sixth and petroleum refining seventh.

The ranking of industries and the value of products as reported by the Census Bureau for 1921 follows:

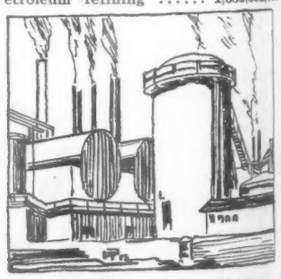
Industry—	Val of Prod.
Slaughtering and meat packing	$2,200,942,000
Petroleum, refining	1,727,440,000
Automobiles	1,671,387,000
Foundry and machine shop products	1,565,527,000
Steel works and rolling mills	1,481,659,000
Cotton goods	1,278,221,000
Steam railroad repair shops	1,180,030,000
Flour mill and grist mill products	1,179,740,000
Printing and publishing, newspapers	1,123,710,000
Bread and other bakery products	1,089,972,000
Clothing, women's	1,022,743,000

The ranking of industries and value of products as reported by the Census Bureau for 1919 follows:

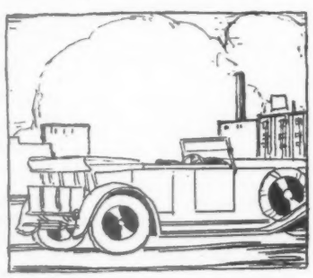
Industry—	Val of Prod.
Slaughtering and meat packing	$4,246,290,614
Iron and steel, steel works and rolling mills	2,828,902,870
Automobiles	2,387,903,257
Foundry and machine shop products	2,289,250,570
Cotton goods	2,125,272,193
Flour mill and grist mill products	2,052,434,265
Petroleum refining	1,632,532,168



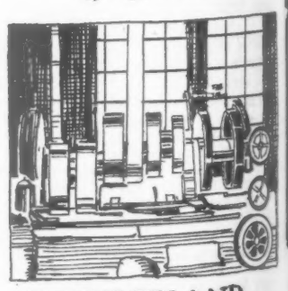
SLAUGHTERING
$2,200,942,000



PETROLEUM
$1,727,440,000



AUTOMOBILES
$1,671,387,000



FOUNDRY AND MACHINE SHOP
$1,565,527,000

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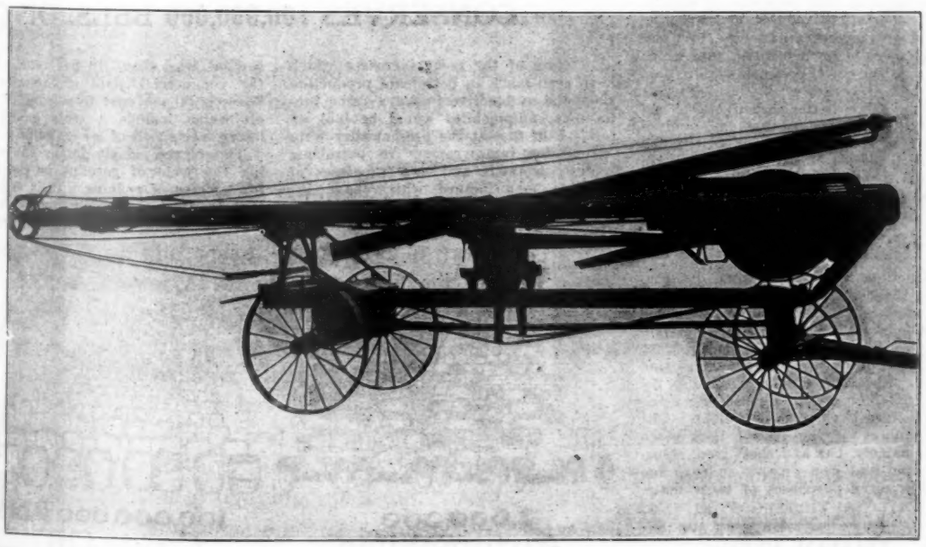
KEEP UP PRODUCTION



With the price of oil advancing, and everything pointing to a winning summer in the oil fields, every producer is interested in keeping production as high as possible.

Wells that are not pulled, when the rods or tubing break, when the valves leak, when the cups are worn or when any of the many troubles occur that may happen to a producing well, cut down on oil sales and so add to the overhead.

Have that old, reliable Trouble Buster, the IRON KING, on the job and see your well worries disappear.

Any oil well supply store will get you an IRON KING or you can write us direct.

We have a catalog for you. Where shall we send it?

The IRON KING MANUFACTURING CO.

BRADNER, OHIO

Say you saw it in The Oil and Gas Journal

MANY MEN WHO MAKE YOUR CAR GO; THEIR LABORS HELP FILL YOUR TANK

When the motorist drives up to the filling station and has the tank of his car filled with gasoline, he may be aware of the ease with which he obtains his needs for fuel, but the chances are that he gives less than a passing thought to the human power that drives his car as he starts away from the station.

If he indulged in a little research he would find that a vast army extending through many phases of industrial enterprise and starting with perhaps a mind, involving tremendous expense in oil field development, transportation and storage facilities, refining and distributing facilities for the handling of tremendous quantities of oil, the low cost of gasoline to the motorist becomes an interesting economic study, revealing that the entire process of the movement of oil from field to filling station is highly and efficiently developed.

It shows that actually the element of direct human labor has been almost completely eliminated, the petroleum indus-

geologist tramping some area remote from civilization in search of oil formations, is driving his car. The geologist locates the oil pool, the lease man searches for desirable acreage, the driller provides the oil well and the oil from which gasoline is derived, the pipe line man builds the pipe line and transports the oil to the refiner, the refiner manufactures the gasoline from the oil, the refiner or marketer gets the gasoline to the filling station or the curb pump.

With these industrial processes in try recognizing that no source of supply, no transportation, refining or marketing method or process can be used in meeting the demand for a primary fuel which does not lend itself to such elimination. This fact, together with the fact that probably there is no manufactured article maintained at so high a standard and so widely and regularly distributed that is dispensed at so narrow a margin of profit, contributes in no small degree to the supplying of gasoline as a cheap fuel.

AMERICA IS WORLD'S LARGEST OIL CONSUMER

The United States is the greatest consumer of petroleum products in the world. Its annual requirements exceed all other countries combined.

In 13 years the per capita consumption in the United States has nearly tripled.

The growth of consumption is shown in the following table:

	Population	Consumption of crude pet., bbls.	An. per capita consump. bbls.
1870 ..	38,558,000	5,261,000	0.14
1880 ..	50,156 000	26,286,000	0.52
1890 ..	62,948,000	45,824,000	0.73
1900 ..	75,955,000	63,620,000	0.84
1910 ..	91,972,000	191,483,000	2.08
1920 ..	105,711,000	530,532,000	5.02
1923 ..	110,000,000	592,432,000	5.38

ALL DEPEND ON PRODUCTION

Without production of oil the refinery will fall into decay, the filling station will be of little use, the pipe lines will rust in the ground, the automobile industry will pass away; all of them are dependent entirely upon that restless horde of speculators scattered throughout the length and breadth of the land, searching for that hidden supply of crude oil.—W. H. Gray.

HAZARDS OF OIL FINDING

Four great outstanding hazards in the finding and producing of crude oil are: 1. The uncertainty of locating oil. 2. The uncertainty respecting amortization. 3. The fluctuating price hazard. 4. The danger of new discoveries more advantageously situated with respect to markets.—E. W. Marland.

TWENTY LISTED OIL SECURITIES DECLINED OVER BILLION IN 1923

Twenty listed oil stocks, at their lows in 1923 were selling for $1,100,000,000 less than market values at the 1923 highs. The appended table from the Wall Street Journal of 20 listed oil stocks shows 1923 highs, lows, decline from year's high, and depreciation in dollars on common stock outstanding:

	1923 High	Recent Low	Decline	Depreciation in Value from High $
Associated Oil	27⅛	24⅞	2½	3,578,000
Atlantic Refining	160	101	59	29,500,000
California Pet.	29⅜	17¾	11⅝	8,080,000
Cosden & Co.	62¼	22⅞	39⅜	57,142,000
General Asphalt	54	25	29	5,764,000
Marland Oil	59⅝	17½	42⅛	58,109,000
Pacific Oil	48⅞	36	12⅞	45,062,500
Pan American Petroleum	93½	54	39½	39,561,000
Pan American Petroleum B	86	51	35	56,321,000
Phillips Petroleum	69⅝	21	48¾	57,593,000
Producers & Refiners	58⅛	17½	40⅝	30,020,000
Pure Oil	32	16⅝	15⅜	43,037,000
Royal Dutch	55⅛	47	8⅛	*5,469,000
Shell Union Oil	19¼	13⅜	5⅞	47,000,000
Simms Petroleum	16	8	8	5,398,000
Sinclair	39⅜	18⅛	21¼	95,453,000
Skelly Oil	35	14½	20½	16,875,000
S. O. of California	64⅛	50½	13⅝	132,396,000
S. O. of New Jersey	44¼	31½	12¾	253,678,000
The Texas Co.	52⅞	36⅛	16¾	110,181,500
Total				$1,100,185,000

*On 673,134 New York shares.

SCIENCE GIVES 2,600,000 CARS GAS; CONSERVES 100,000,000 BBLS. OF OIL

In spite of the great increases which have been made in petroleum production since the automotive industry came into its own, automobiles would be laid up for lack of fuel at the present time were it not for improvements in petroleum refining methods and new processes of gasoline manufacture which have increased the yield of gasoline from a barrel of crude oil.

content was about 18 per cent. Today the commercial yield of American refiners is 30 per cent from runs of crude oil which include a large quantity of heavy foreign oil of low gasoline content.

The biggest single factor in increasing the yield of gasoline is the cracking process of refining. It is estimated that in 1923 the production of cracked gasoline totaled 1,125,000,000 gallons.

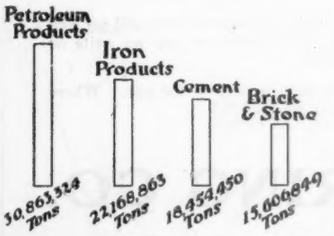
Not only has the growth of the automobile made it necessary for the oil man to find new oil fields but also for him to mobilize scientific forces in the effort to find new methods of refining oil. How well he has succeeded is partially indicated by the fact that in the early days of the automobile the average commercial yield of gasoline was under 11 per cent. The highest possible gasoline

The single scientific development, therefore, makes possible the use of 2,000,000 automobiles more than would otherwise have been supplied from a given consumption of crude oil.

Moreover, the cracking process is conserving for the future 100,000,000 bbls. of crude oil annually, by making possible the meeting of consumption from a smaller quantity of crude oil.

OIL INDUSTRY LEADS AS RAILROAD SHIPPER

According to the Interstate Commerce Commission's reports the rail shipments of refined petroleum and products lead all other manufactured articles. Lead-



ing shipments in 1922 follow: Refined petroleum and products, 30,863,324 tons; bar and sheet iron, structural iron and iron pipe, 22,168,863 tons; cement, 18,454,450 tons, and brick and artificial stone, 15,606,849 tons.

In addition to shipments of refined petroleum, 5,935,997 tons of crude oil were transported on railroads in 1922.

In addition to its direct contribution to the prosperity of the railroads, the petroleum industry as a purchaser originates a great volume of freight. The high ranking of the second item given above, namely, bar and sheet iron, structural iron and iron pipe, is in part due to oil country purchases of these materials.

PECULIAR TO OIL

Oil is difficult of control and of apportionment to the needs of industry. Always the relation of supply to demand in the oil industry will be difficult of adjustment. There will be a lack of balance and the menace which always accompanies a lack of balance between supply and demand and this peculiar to oil. —Julius H. Barnes, President Chamber of Commerce of the United States.

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"VULCAN" CHAIN PIPE WRENCHES
With Through Bolt Construction

The **standard** oil fields tool, are stocked by practically every dealer in such territory because the great majority of users demand them. Twenty-five years of constant service have conclusively proved their worth.

Each "Vulcan" flat link chain is individually proof tested in a standard tension machine to two-thirds of its catalog breaking strain. Williams' Wrenches are the ONLY pipe wrenches that offer this proved strength and security.

Refuse substitutes and imitations. Insist upon getting Williams' Genuine "Vulcan" Wrench. Eight sizes for ⅛ to 18" pipe.

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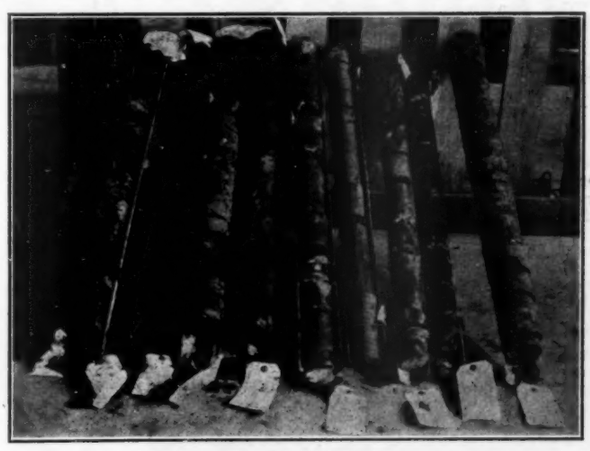

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Costs Vary in Bringing Oil to Surface

Government Engineer Compiles Figures Covering Many Fields and Different Producing Conditions

By H. C. George
Petroleum Engineer, Bureau of Mines, Department of the Interior

This report presents a comprehensive tabulation of lifting cost data collected from oil companies in many different fields. These data were collected during the writer's studies of surface equipment and methods of pumping oil wells, in practically all of the important oil fields in the United States and are based on average operating conditions at 57 groups of properties, with a total of 4,497 producing wells.

Although lifting cost is only a part of the total cost of producing oil, it nevertheless gives a representative cost figure for purpose of comparison.

Cost of Producing Oil

It is difficult to arrive at a general figure for the total cost of producing oil, because the factors involved are both varied and complex. In addition to production or operating cost, which includes the lifting or direct production cost, it is necessary to consider amortization of capital invested, rents and royalties, depletion of oil reserves and depreciation of physical equipment.

Although there are many systems used for the classification of production or operating costs, the following is fairly representative of those in use:

1. General Expense. This item includes executive salaries, clerical expense, legal expense, general office expense, taxes insurance, rent, compensation insurance, damages and welfare expense.

2. General Development Expense. This item includes the general expenses of the land and leasing, scouting, geological, chemical, research and engineering departments.

3. Lifting Expense. This item includes the cost of labor and materials for operating and maintenance of pumping or flowing oil wells, including the cost of operation and maintenance of all equipment directly required for the delivery of the oil from the wells to the stock tanks.

4. Treating Expense. This item includes the cost of maintaining and operating plants for steaming and dehydrating chilled and emulsified oil.

5. Development Expense. This item includes the amount paid as bonus for leases, cost of drilling wells and securing new production.

6. Other Field Expense. This item includes miscellaneous cost of labor and materials for operation and maintenance of oil field camps, repairs to roads and operation and maintenance of other equipment in use at the operating property which are not included under any of the other headings.

Factors Affecting Lifting and Operating

The lifting and operating costs at oil well properties depend upon three groups of factors, namely: Conditions existing at the individual wells, conditions peculiar to individual properties and fields, and conditions depending upon the qualifications of the owners and operators.

Conditions Existing at Wells

Whether a well flows, whether it is pumped individually "on the beam," pumped as one of a group by a "power" or jack plant, operated by the air-lift system or by some other method, depends upon a number of factors such as the location of the well, quantity of oil, amount of gas pressure, fluid level in the well, gravity and character of the oil, amount of sand, water and emulsion produced with the oil and depth from which the oil is produced. The combined influence of many factors, rather than any one factor, determines what production method should be used.

Peculiar Conditions

Conditions which influence operating costs and are peculiar to any property or oil field are: The depth and character of the producing sand, the amount and character of the oil present, the amount and pressure of the gas present, the volume and character of the water present, the character and quantity of fuel available for development and operating requirements, topographical conditions, number of wells in the area, quantity and quality of water for development and operating purposes, living and climatic conditions, quantity and quality of timber available for field use, transportation facilities, probable life of the oil field, present stage of development and methods and equipment in use.

The financial condition and standing of the owners, the character of the operating organization and the capacity of the management have a vital bearing upon operating costs and results.

The larger and older oil companies generally have strong, efficient organizations which are the product of years of experience and development. By means of these organizations operating costs have been reduced to a minimum. It is unfortunate, however, that many oil companies, especially some of those in the more recently developed oil fields, operate at unnecessarily high cost with insufficient capital and inefficient organizations.

The lifting cost or lifting expense may range from 20 to 90 per cent of the total cost of producing oil, depending upon the ratio that it bears to production or operating cost, which in turn has a variable ratio to total cost.

Table 1 shows the distribution of lifting cost for 48 wells located in three different Louisiana oil fields. The different headings used for distribution of lifting cost in this table are fairly representative of most lifting cost sheets.

Table 2 shows the lifting cost for 4,497 wells located at 57 different groups of properties in different oil fields of the United States. Differences in operating conditions, stage of development and extent of depletion at the various groups

(Continued on Page 126)

Table 1—Showing distribution of lifting cost (bringing the oil to the surface), for 48 wells pumped "on the beam" by gas engine. All of the wells are located in the Louisiana oil fields. The costs are for the first six months of 1921.

Parish—	No. of wells	Av. depth feet	Labor	Teaming	Repairs	Tools and supplies	Water and fuel	Total lifting expense	Av. cost per well	No. bbls. production	Av. lift. expense per bbl.
Claiborne	9	1742	$ 9,471.49	$ 2,184.15	$12,103.46	$ 675.75	$ 6,138.68	$30,573.53	$ 3,397.06	37,208.12	$ .82
Claiborne	19	1193	16,950.55	4,043.43	12,879.21	2,637.48	37.60	36,548.27	1,923.59	243,354.56	.15
Claiborne	6	1405	1,871.01	657.19	1,236.08	207.35	129.11	4,100.74	683.43	14,874.84	.28
Caddo	3	2311	1,228.18	192.76	866.53	34.30	1,591.71	3,913.48	1,304.49	511.08	7.66
Caddo	2	2279	1,125.90	243.50	855.93	92.44	862.00	3,179.77	1,589.88	1,561.58	2.04
Caddo	1	2321	775.13	52.01	413.06	1.26	.....	1,241.46	1,241.46	.....	...
De Soto	8	2666	1,989.94	1,412.39	4,214.55	189.29	208.50	8,014.67	1,001.83	7,313.32	1.10
Total			$33,412.20	$ 8,785.43	$32,568.82	$ 3,837.87	$ 8,967.60	$87.571.92		304,823.50	$ .287

Table 2—Lifting costs (bringing the oil to the surface) of groups of wells from a number of the oil fields of the United States, for the first six months of 1921. (Taxes, overhead, depreciation, development and depletion are not included).

Examp. No.	Location of wells—	No. of wells	Barrels per well per day	Lifting cost per well per mo.	Lifting cost per bbl. oil	Average depth feet	Method of pumping	Power used
1	Beaver Co., Pa.	74	.17	$ 15.51	$3.03	1000 to 1600	Beam	Gas engine
2	Washington Co., Pa.	154	.18	14.34	2.68	1800	Beam	Gas engine
3	McDonald Pool, Pa.	57	.92	41.04	1.48	1800	Beam	Gas engine
4	Butler Co., Pa.	120	.49	41.17	2.80	1300 to 1600	Beam	Gas engine
5	Kane, Pa.	70	2.89	14.76	1.70	2000	Beam	Gas engine
6	Bradford (flood) Pa.	36	1.03	35.50	1.14	2000 to 2100	Beam	Gas engine
7	Bradford, Pa.	124	.25	9.51	1.25	1200 to 1300	Power	Gas engine
8	Tiona Field, Pa.	103	.17	2.93	.54	1000 to 1200	Power	Gas engine
9	Oil City (shallow) Pa.	21	.08	3.71	1.51	1200	Power	Gas engine
10	Tionesta, Pa.	137	.05	7.50	4.86	1200 to 1400	Power	Gas engine
11	Pleasantville, Pa.	64	.13	7.20	1.82	800 to 1000	Power	Gas engine
12	Most Fields, W. Va.	577	1.93	59.82	1.03	2328	Power	Gas engine
13	Monongalia Co., W. Va.	61	.74	48.77	2.20	2163	Power	Gas engine
14	Washington Co., Ohio	65	.78	10.58	.45	300 to 1200	Power	Gas engine
15	Wood Co., Ohio	24	.29	19.05	2.13	1200 to 1400	Power	Gas engine
16	Lawrence Co., Ill.	20	1.90	13.05	.23	1600 to 1800	Power	Gas engine
17	Big Muddy Field, Wyo.	87	15.50	139.66	.30	1000 to 3200	Power and Beam	Gas engine
18	Graybull Field, Wyo.	14	2.57	135.69	1.76	1000	Power	Gas engine
19	Torchlight Field, Wyo.	12	.66	34.25	1.73	600	Power	Gas engine
20	Elk Basin Field, Wyo.	49	16.32	151.77	.31	900 to 1200	Power	Gas engine
21	Grass Creek, Wyo.	73	12.58	79.25	.21	500 to 1000	Power	Gas engine
22	Salt Creek, Wyo.	65	106.00	127.20	.04	1700	Flowing	.....
23	El Dorado, Kans.	268	16.61	343.75	.69	750 to 2400	Beam	Electric motor
24	Augusta, Kans.	128	13.32	379.87	.95	1700 to 2400	Beam	Electric motor
25	Cleveland Dist., Okla.	13	4.27	43.55	.34	2400	Beam	Gas engine
26	Glenn Pool, Okla.	26	4.09	63.80	.52	1640	Power	Gas engine
27	Garber Field, Okla.	16	4.41	76.73	.58	1809	Power	Gas engine
28	Bird Creek, Okla.	45	2.44	29.28	.40	1327	Power	Gas engine
29	Pershing, Okla.	72	12.85	88.66	.23	2121	Power	Gas engine
30	Hickory Creek, Okla.	33	4.42	29.17	.22	900	Power	Gas engine
31	Nowata Co., Okla.	15	.98	5.91	.20	1075 to 1205	Power	Gas engine
32	Washington Co., Okla.	24	1.01	21.00	.69	1300 to 1350	Power	Gas engine
33	Slick Field, Okla.	62	48.10	101.01	.07	2600 to 2800	Power and Beam	Gas engine
34	Nowata Co., Okla.	18	.44	5.81	.44	1120 to 1180	Power	Gas engine
35	Washington Co., Okla.	59	.43	9.54	.74	470 to 1350	Power	Gas engine
36	Osage Co., Okla.	172	5.71	61.67	.36	1600 to 2200	Power	Gas engine
37	Claiborne, La.	34	48.48	349.05	.24	1200 to 1800	Power	Gas engine
38	Caddo, La.	4	17.27	295.32	.57	2302	Beam	Gas engine
39	De Soto, La.	8	40.63	170.65	.14	2666	Beam	Gas engine
40	Eastland Co., Texas	10	8.45	162.24	.64	3425	Beam	Gas engine
41	Burkburnett, Texas	6	32.70	402.21	.41	1666	Power	Steam engine
42	Stephens Co., Texas	8	3.70	79.92	.72	2200 to 3200	Beam	Gas engine
43	Wichita Co., Texas	9	3.07	36.84	.40	850 to 1000	Power	Gas engine
44	Goose Creek, Texas	21	77.75	466.50	.20	3040	Beam	Electric motor
45	Sour Lake, Texas	23	37.65	293.67	.26	2215	Beam	Steam engine
46	Kern River, Cal.	18	8.17	75.98	.31	750	Power	Electric motor
47	Kern River, Cal.	226	5.00	34.50	.23	300 to 900	Power	Electric motor
48	Kern River, Cal.	23	18.55	222.60	.40	1500 to 2000	Power	Electric motor
49	Coalinga, Cal.	211	34.68	457.77	.44	2500 to 3900	Beam	Gas engine
50	Coalinga, Cal.	34	14.36	284.33	.66	1200 to 2500	Beam	Gas engine
51	McKittrick, Cal.	52	19.69	194.93	.33	500 to 1200	Power and Beam	Gas engine
52	Midway, Cal.	24	7.06	63.54	.30	1100	Power	Gas engine
53	Sunset, Cal.	345	95.83	344.99	.12	2700 to 3600	Power, Beam and Flow.	Gas engine
54	Maracopa, Cal.	50	43.28	272.66	.21	1000 to 3700	Beam	Gas engine
55	Orange and Los A. Co., Cal.	148	97.37	467.38	.16	2000 to 5000	Beam	Gas and steam eng.
56	Santa Maria, Cal.	198	33.03	247.72	.25	2000 to 4000	Power and Beam	Gas and steam eng.
57	Ventura, Cal.	87	6.99	67.10	.32	600 to 2500	Beam	Gas and steam eng.

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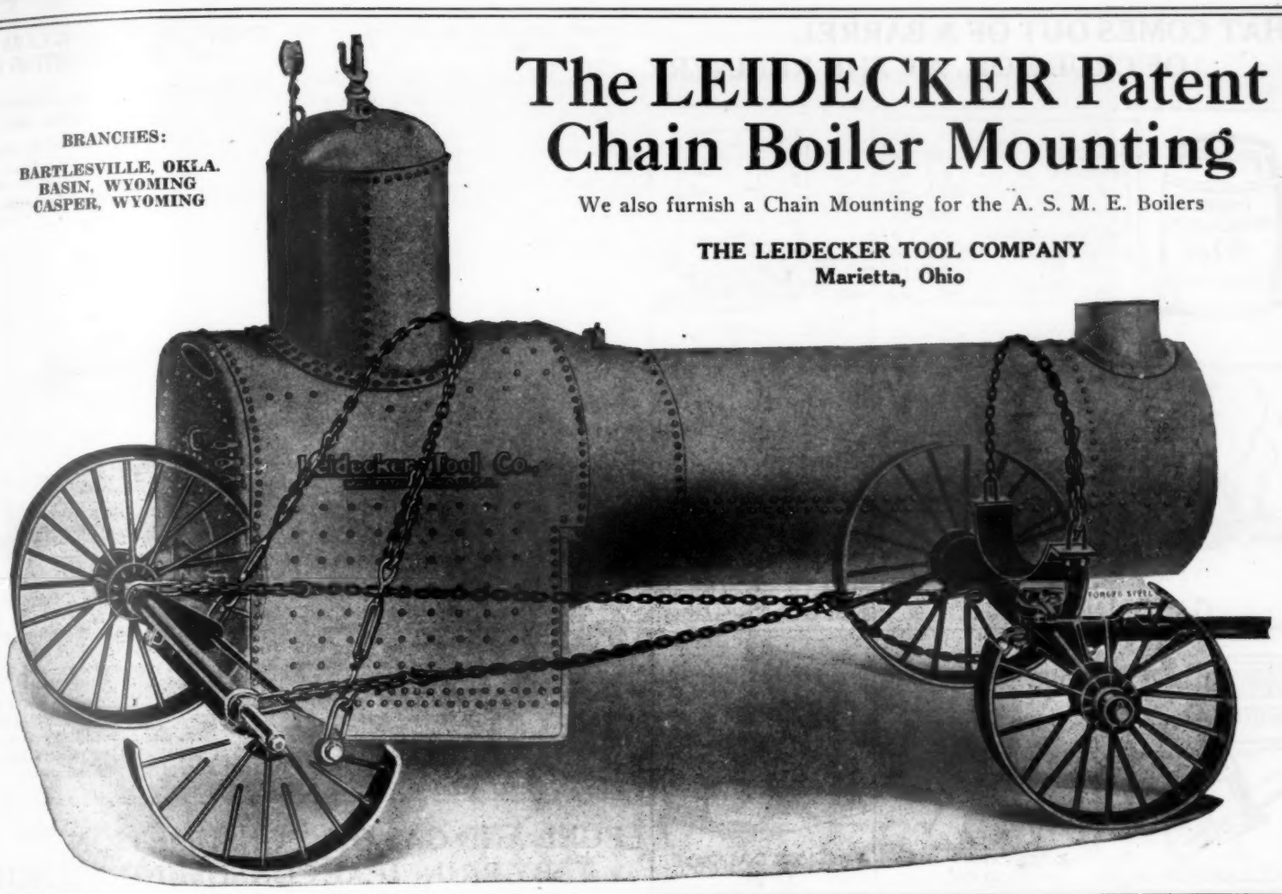

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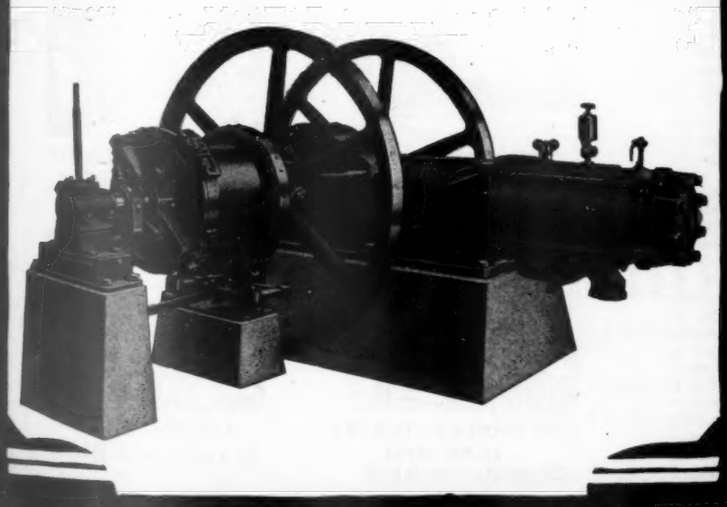

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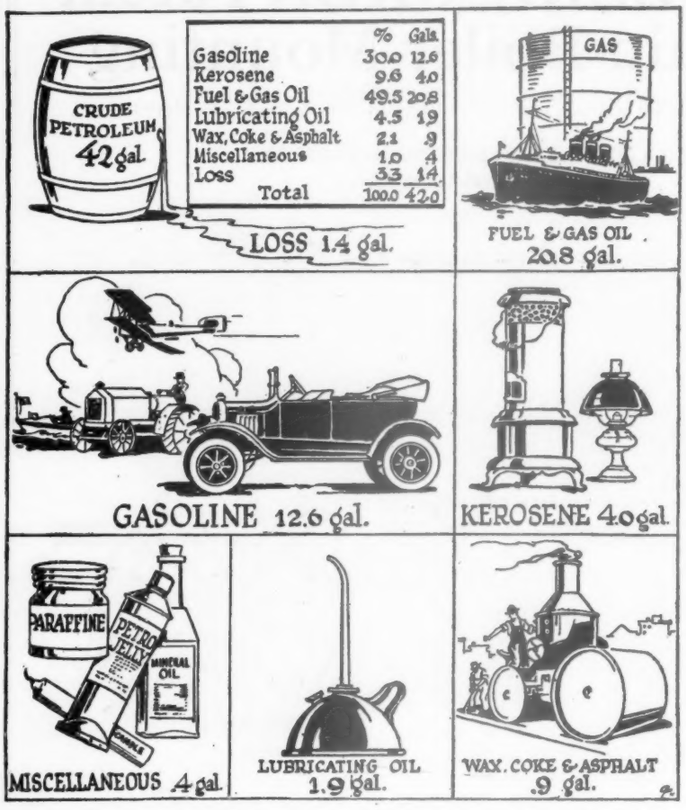
WHAT COMES OUT OF A BARREL OF CRUDE OIL AT THE REFINERY



	%	Gals.
Gasoline	30.0	12.6
Kerosene	9.6	4.0
Fuel & Gas Oil	49.5	20.8
Lubricating Oil	4.5	1.9
Wax, Coke & Asphalt	2.1	.9
Miscellaneous	1.0	.4
Loss	3.3	1.4
Total	100.0	42.0

The gasoline that you buy at the filling station is a manufactured product derived from crude oil. After the crude oil is produced in the field it is transported by pipe line to the refinery.

The manufacturer of petroleum products involves the installation and operation of costly refinery equipment, including tanks for storing and settling oil, stills for heating, vaporizing and separating the different gases and d'stillates derived from crude oil, agitators for treating gasoline, filters for lubricating oils, sweat houses for wax, power plants, machine shops, plant railroads and pipe lines for carrying oil, gas, steam and water.

There are 42 gallons of oil in a barrel. The average yield of products from a barrel of crude oil in the United States is: Gasoline, 30.0 per cent, or 12.6 gallons; kerosene, 9.6 per cent, or 4.0 gallons; fuel and gas oil, 49.5 per cent, or 20.8 gallons; lubricating oil 4.5 per cent, or 1.9 gallons; wax, coke and asphalt, 2.1 per cent or .9 gallons; miscellaneous oils 1.0 per cent or .4 gallon, and loss 3.3 per cent or 1.4 gallons.

COSTS VARY IN BRINGING OIL TO SURFACE

(Continued from Page 124)

of properties given in Table 2, produce extreme variations in lifting cost per barrel of oil and lifting cost per well per day. The lifting cost frequently ranges from less than 3 cents per barrel at flowing wells producing several hundred barrels a day to more than $3 a barrel at wells producing less than a fifth of a barrel per well per day. On the other hand, the lifting cost per well per month may range from more than a thousand dollars at large flowing wells such as those recently developed in Oklahoma, Texas, Arkansas, and California, to less than $10 at many of the old wells pumped only a few hours a week, as in most of the oil fields of New York and Pennsylvania, where the average daily production per well per day is less than a quarter of a barrel.

Results of Different Methods

An oil well property at Goose Creek, Texas, illustrates the great variation in cost and amount of production, sometimes resulting from the use of different methods of production at different wells of practically the same depth located in the same oil field. There are 59 wells in the group. Of this number 56 wells are pumped "on the beam," producing from 500 to 900 barrels per well per day. The other three wells could produce from 1,500 to 2,000 barrel per well per day, which is more than could be handled by "beam pumping." There being enough submergence for good operation, the air-lift system was installed and used at these latter wells. The power consumption at the 56 wells pumped "on the beam" averages 185,106 k.w. per month for the group. The power consumption at the three wells pumped by the air-lift system averages 201,204 k.w. per month for the group. In other words, more power is required at the three wells at the 56. However, by using the air-lift system at the three wells an additional 1,500 to 2,000 barrels of oil are secured daily.

High Cost in Pennsylvania

With the market price of $4 per barrel of oil in the Pennsylvania oil fields on May 1, 1923, it is very evident from example Nos. 1 to 11, inclusive, shown in Table 2, the lifting cost must represent a very large part of the total cost, otherwise these wells would now be operated at a loss. Example No. 10 is the only one of the 11 examples from the Pennsylvania oil fields that is apparently being operated at a loss. However, this group of 137 wells is operated by a company having its own refining facilities so that the value of the oil is probably not based upon the prevailing market price.

In general the less the amount of oil produced per well per day, the higher is the percentage which the lifting cost is of the total cost, and conversely the greater amount of oil produced per day per well the lower is the percentage, which the lifting cost is of the total cost.

One of the oil companies operating in California gave the following information showing the relation of lifting cost to production or operating cost for all of its field operations from 1890 to the end of 1922. The cost of leases are not included in the development costs, neither are depletion, depreciation or royalties taken into consideration. The figures are for the production of 121,000,000 barrels of oil over a period of 22 years.

	Operating cost per bbl.
Lifting cost	$ .0922
Overhead	.0369
Development cost	.2269
Total	$ .3860

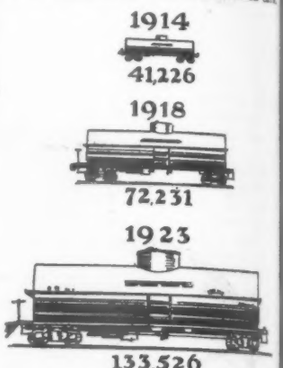
Full acknowledgement is made to the oil companies that furnished the lifting cost data which form the basis of this report.

IF GOVERNMENT HAD DRILLED

If the Government had been the only driller of wells the boundaries of possible production would have been fixed early and definitely. Congress might possibly have appropriated enough to drill a few holes where the Geological Survey said there was oil. Poor wildcatter! We should never have seen him in his glory, finding oil where there was none, building mansions, establishing banks, buying railroads, finding some more oil, always making money circulate. Fancy the slow progress, perhaps no progress in the early days.—Amos L. Beaty, chairman of the board of The Texas Co.

GROWTH OF TANK CARS FOR TRANSPORTING OIL

Petroleum products are transported to market by railroad. Unlike other industries, the petroleum industry supplies its own cars for which the railroads pay a small rental which yields no return on the industry's invetment in such cars.



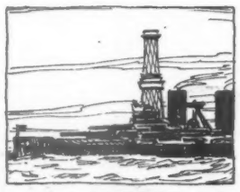
The railroads own only a comparatively small number of tank cars.

On January 1, 1914, there were 41,226 tank cars, of which 30,764 were owned by the petroleum industry, and 10,462 by the railroads. On January 1, 1918, there were 72,231, of which 60,014 were privately owned and 12,217 railroad owned. On January 1, 1923, there were 133,526, of which 118,926 were privately owned and 14,600 railroad owned.

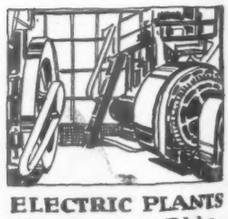
FUEL AND GAS OIL CONSUMPTION BY PRINCIPAL CONSUMING AGENCIES

RAILROADS
45,000,000 Bbls.

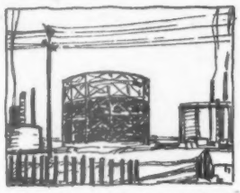
MERCHANT VESSELS
52,000,000 Bbls.



U. S. NAVY
6,000,000 Bbls.



ELECTRIC PLANTS
40,000,000 Bbls.

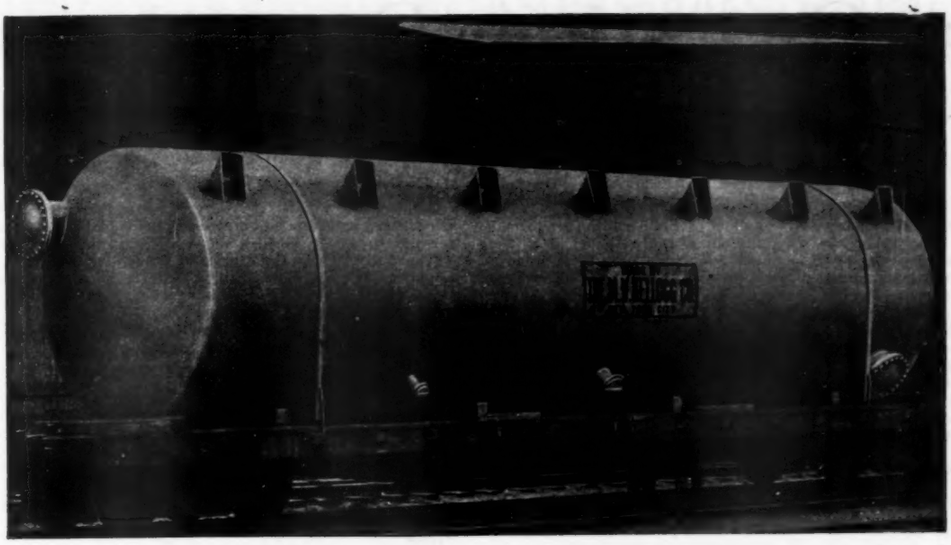


GAS MANUFACTURERS (GAS OIL)
22,000,000 Bbls

INDUSTRIES
125,000,000 Bbls.

Fuel oil, as a surce of power, is becoming of increasing importance each year.

Based on latest official figures and authentic estimates, in 1923 the railroads of the United States consumed 45,000,000 barrels; merchant vessels, 52,000,000 barrels; the United States Navy, 6,000,000 barrels; public utility electric power plants, 40,000,000 barrels, and other industries, 125,000,000 barrels. In addition, 22,000,000 barrels of gas oil were consumed by gas manufacturing plants in the making of artificial gas.



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Drilling Operations Depend on Prices

Reducing Amount Paid for Crude Results in Holding Up New Work. Hazard Involved Necessitates Higher Prices

By Andrew M. Rowley

Drilling activities in any oil field are dependent entirely upon what the oil man risking his money and devoting his time expects to receive for this hazard and labor. If the tendency seems to be toward lower prices for crude oil, everyone will hold off his drilling as long as possible and reduce all such work as is necessary to an absolute minimum. Such a condition is not only logical but an evidence of good business judgment.

No one can expect a man to risk his money and spend his time in an operation which will not prove profitable even if successful. When there is a big production of oil coming, as it always does, from flush fields, or new fields where the wells flow thousands of barrels of oil a day, prices are bound to be reduced, because when the supply exceeds the demand, crude oil must be stored and it is an expensive proposition to store crude oil as the steel tanks or concrete reservoirs necessary cost on an average, 50 cents a barrel for the oil stored.

Production Makes Price

In new flush fields, where the wells being completed will average several thousand barrels a day each, men can drill profitably at a far less price per barrel for their oil than other men in other fields can do, because the production of the wells in the flush fields is so much greater than the output per well in the older fields where the flush production is gone. In other words, when a man has a well flowing 4.000 or 5.000 barrels of oil a day, he can afford to accept less per barrel for that oil than can the man who has a well making 10 or 15 barrels a day, because the cost of drilling and other expenses in each instance may be just the same.

For instance, it cost as much to drill wells in the Okmulgee County district in Oklahoma as it did in the Powell Field in Texas. Yet, in the Powell Field, wells were completed making anywhere from 5.000 to 20.000 barrels a day each, while the average production per well per day in Okmulgee County is about 4 1-5 barrels at this time.

When conditions prevail such as obtained last year with California flooding all the market with cheap crude from gusher wells in its three big fields, prices of crude oil dropped because there was more oil being produced than was being used and vast quantities were being put into storage which cost millions of dollars. Then the Powell Field started its spectacular career late last summer and added from 6.000.000 to 9.000.000 barrels a month to the already saturated market and crude oil reductions became a common occurrence.

Low Prices Reduce Drilling

No individual or organization or group of individuals or organizations could maintain prices under such conditions. The oil business is too big and there are entirely too many persons involved and firms engaged in the production and distribution of oil to permit anything but the law of supply and demand to regulate prices.

As a result of declining prices and increased production, drilling operations in the fields affected by the decline—those fields which did not have any big flush production—were reduced to a minimum and production in these areas began to fall. In Oklahoma alone production dropped from 527,000 barrels a day to less than 390,000 barrels daily. This was a natural result of curtailed drilling operations and the lessened field activity was a direct result of the low prices being paid for the crude oil. There was no stimulus for a man to risk his money and time in drilling for oil when prices were so low he could not expect to make anything out of the well even if he were fortunate enough to procure a producer.

Then the production of California began to decline and the Powell Field slumped off rapidly, its decline being as spectacular as its rise. Consumption continued at high rate and the margin between the amount of oil being produced and the amount being consumed became less and less and finally, about the first of this year it began to widen in the opposite direction, that is, production instead of being far greater than consumption, became less than consumption.

Drilling Starts as Prices Rise

The oil men, keeping in close touch with figures on production and consumption, saw the trend of conditions and began to prepare for another drilling campaign. Activity became noticeable in every field. The large purchasing companies began to draw upon the oil they had in storage instead of being forced to place oil in storage and they began to increase prices of crude oil. In other words, the demand exceeded the supply being produced and the economic law of supply and demand again stepped to the front and prices for crude oil began to go up.

With the advance in the price of crude oil, drilling activity was resumed. The stimulus of higher prices and the hope prices would continue to advance spurred the oil men and they began again to drill for oil.

The direct effect of the price of crude oil upon the amount of drilling done is shown plainly in the following table which shows the number of wells completed by months in Oklahoma, Kansas and North Texas, an area where the same price is posted for crude oil.

Table Shows What Happens

1923—	Wells Comp.	Crude Oil Price
January	853	$1.53
February	823	1.91
March	861	1.99
April	1,039	1.97
May	1,281	1.67
June	1,153	1.58
July	1,060	1.58
August	958	1.58
September	637	1.47
October	469	1.28
November	343	1.05
December	426	.98
1924—		
January	438	1.30
February	642	1.65

Prices Control Drilling

It is seen that at the first of last year drilling operations began to increase because the trend of conditions then was towards higher prices as the production of crude petroleum throughout the United States was less than the quantity being consumed. This condition prevailed until April when the flood of oil from California began to have its effect and production was greater than consumption. The first reduction in the price of crude oil in Oklahoma, Kansas and North Texas was made April 23. Naturally drilling operations began to be affected at once but wells which had been started were carried to completion and the increased activity resulting from increased prices in the previous months had caused so many new operations to be started, the month of May showed the greatest number of wells completed because these wells had been started before the price of crude oil was cut.

But with the completion of the wells which had been started before the price of crude was dropped, a steady and material decline was noted in the number of wells completed in later months, the number of wells completed in Oklahoma, Kansas and North Texas dropping from 1,281 in May, to 343 in November of the same year.

In November, the Powell Field in Texas reached its peak and then began to slump very rapidly, the output of the field dropping from a daily average of around 325,000 barrels around the middle of November to less than 90,000 barrels a day a month or so later. California, also, had passed its peak and was showing signs of a rapid and substantial decline.

Conditions Improved

The oil men again began to take heart and sit up and take notice. Production was still greater than consumption, but the margin was so slight as to be almost negligible. Knowing that as soon as the purchasing companies started to draw upon their oil in storage, which meant consumption was greater than production, prices for crude would be advanced, the oil men began mapping out drilling campaigns and activity in many of the fields was resumed.

This change in conditions is shown by the fact the number of wells completed increased from 343 in November to 426 in December. While the average price per barrel of oil was less in December than in November, the oil men could determine the price advance was bound to come because of prevailing conditions and their wisdom was demonstrated by the fact crude oil price advances were announced in many fields in the latter part of November, and one company announced an increase in Oklahoma, Kansas and North Texas the latter part of December. The largest buyer of crude oil announced a substantial increase in price on January 9 and followed this on January 19 with another increase. A third increase was announced February 2.

Drilling operations began to pick up when conditions indicated prices would be advanced and the increase in the number of wells completed has gone along with the increase in prices.

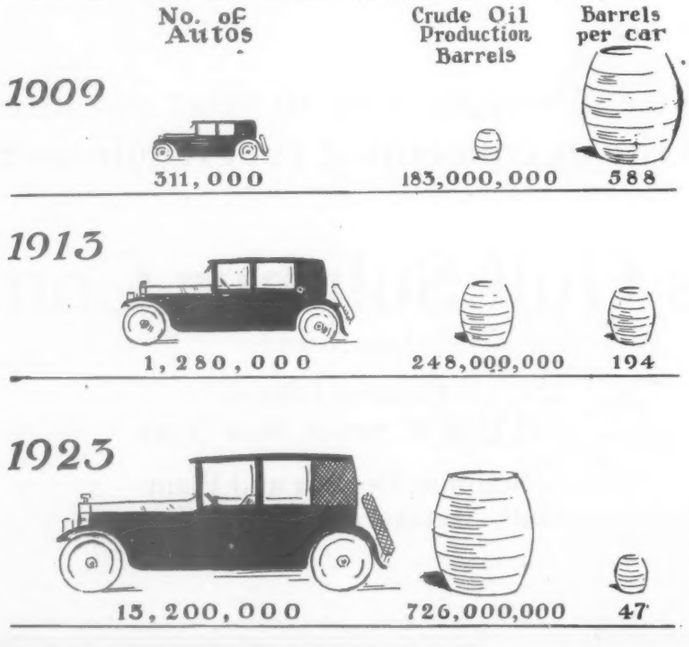
It does not seem possible there can be any doubt whatever but that increased prices for crude oil are necessary to stimulate drilling operations. When crude oil is needed, the only way to get it is to drill wells. The only way to get men to drill wells is to make it worth their while to do so and this means prices which will assure them a good profit for the risk they take and the time they devote to the work. And the reverse is true as is proved by the table above. When prices of crude are reduced, drilling operations will decrease.

AUTOMOBILE AND OIL PRODUCTION SHOW LESS OIL AVAILABLE PER CAR

In 1909 there were 311,000 motor cars registered in the United States and production of crude oil for that year was sufficient to supply 588 barrels for each car.

In 1913 the automobiles in use on the streets had quadrupled in number. There were 1,280 000 cars registered. Oil production had increased 65.000,000 barrels in the four years. But there was an available supply per car of only 194 barrels.

In the next 10-year period where there was one car on the road in 1913 there were 10 on the road at the end of 1923. In other words, there was an increase of 1,000 per cent in the number of cars registered, the number at the end of 1923 being 15,200,000. The petroleum industry, on the other hand, was able to make a phenomenal increase in production, amounting to nearly 500.000.000 barrels. But despite this increase the number of barrels available for each car registered dropped to 47 barrels by 1923.



REFINING AND MARKETING

Kansas Court Rules Prairie Can Refine And Retail Products

TOPEKA, Kans., March 17.—A modification of an opinion of June 15, 1911, prohibiting the Prairie Oil & Gas Co. from manufacturing petroleum products or from selling them through tank depots or supply stations was announced by the State Supreme Court here recently with the result that this company may now engage in the business of refining crude oil and distributing its products to the retail and wholesale trade.

Attorneys for the Prairie appeared before the court recently with an application for a modification of the old order, alleging the order had been modified for other companies that were defendants in the original suit of 1911. By means of this modification, the Prairie may establish filling and bulk stations throughout the country and manufacture gasoline and other refined products from crude oil.

The Standard Oil Co. of Indiana secured a modification of the order several years ago to permit such business transactions. The original suit was brought in 1911 when it was alleged the gasoline interests of the country were combined in an effort to control the price of the product. In its order the court points out that it still retains jurisdiction in the matter.

TANK CAR MILEAGE EQUALIZATION CASE

The matter of tank car mileage equalization was brought out recently in the case of the General Petroleum Corp. against the Chicago, Burlington & Quincy Railroad, Docket 14942. This case, which was handled jointly by W. R. Boyd, of the American Petroleum Institute, and the National Petroleum Association, involved the situation growing out of the suspension, during Federal control, and the restoration immediately thereafter, of the tariff rule requiring payment at published tariff rates for any excess of empty mileage over loaded mileage of tank cars moving during an established accounting period. The complaint which was filed as a test case, covers three movements of empty tank cars subsequent to Federal control, which, but for the suspension of the equalization rule, would have been offset by loaded movements during the period of Federal control.

The proposed report of the Examiner recommends that the charges on these three cars (which originally moved loaded from Los Angeles, Cal., to Norwood and Providence, R. I.) be found inapplicable and illegal. The Examiner said, in part: "Inasmuch as the shipments prior to termination of Federal control moved under the tariff provision that the empty cars should be returned without additional charge, the fact of transition from Federal to coroprate control of carriers did not annul its effect. The equalization rule was not applicable to such movements. It applied only on shipments initiated after the effective date of its restoration."

REFINERS SEEK NEW RATE

Petition of the Kansas refiners for a new differential in their favor, over the one now in effect in the Group 3 territory, is to be brought up Wednesday, March 19, before the Interstate Commerce Commission at Kansas City, Mo. A strong move to postpone the hearing proved of no avail.

SECURES U. S. RIGHTS ON REFINING PROCESS

CHICAGO, March 17.—William H. Stephenson, Jr., of this city, sailed for England on Thanksgiving day to witness tests of the Lenox refining process in London. He returned this week with a contract which makes the American Traders Corp., of this city, the exclusive agents for this process in this country. The head of the American Traders Corp. is William J. Vopicka who was the consul to Rumania under the Wilson administrations. It was largely through his influence that the British Government, which holds the exclusive rights to use the patent in Great Britain, permitted the making of the contract for this country, it is claimed.

Full details of the operation will be given later but it is stated by Mr. Stephenson that the process actually secures 62 per cent gasoline from residual oils at a single operation. The oil is drawn from a tank into an agitator where it is treated with certain chemicals which are not expensive. From the agitator the treated oil is run to a tank where it is subjected to an electrical current of 220 volts. From thence it travels to the still where the heat applied is never over 212 degrees F. and the pressure never over ⅝-pound per square inch. It is then run through a simple catalysis and comes out as a gasoline ready for use.

Mr. Stephenson states the product is cold and that he saw it drawn directly into automobiles and trucks which used it successfully as fuel. A report of Professor Harker made at the instance of the British Government gives the initial as 100 degrees, the end point as 365 degrees and the specific gravity as .790. The color is stated to be 23-25 and the product "as nearly odorless as possible," to quote the professor.

The plan is to build plants adjoining independent refineries where they can take the residual oils from the straight run stills and return the product to the refinery on a royalty basis. A side product of the process is stated to be about 5 per cent of a high grades cleaners' naphtha which in England sold at about as high a price as motor spirits, according to the report.

SUES SHELL CO. FOR ROYALTY ON PROCESS

SAN FRANCISCO, March 17—Suit alleging patent infringement was filed in the United States district court here recently by Frank Navin, inventor of an oil recovery process, against the Shell Oil Co., in which he asks $25,000,000 damages. Philip S. Ehrlich, his attorney, declares the Shell suit it the first of 100 or more to be filed against oil companies. Navin claims his patent has permitted salvage of large petroleum deposits from wells which would have been sanded up and abandoned otherwise. He says he is entitled to 25 per cent royalty of all oil so produced.

TO ENLARGE TEXAS REFINERY

ORANGE, Texas, March 17.—The Sycamore Oil Co. is planning to enlarge its refinery here to a daily capacity of 10,000 barrels, according to a recent announcement. The work will be started within 90 days. The Sycamore Oil Co. is a subsidiary of the National Oil Co. of New York. The refinery was acquired from the Seaboard Oil & Refining Co. The Sycamore is said to be contemplating a drilling campaign on its properties in the Gulf Coast region and will increase the number of tankers for carrying products to the Atlantic ports.

IN CHARGE OF TANK CAR SALES

M. J. Grogan, formerly manager of the Dallas branch of the Acme Petroleum Co., has joined the Louisiana Oil Refining Corp. in the capacity of sales manager, with headquarters at Shreveport, La. Mr. Gorgan will have charge of tank car sales of all refined products. Recent enlargements of the company's refineries and the completion of the lubricating oil plant at Shreveport have necessitated an expansion of this corporation's sales department.

WEATHER HAS EFFECT ON COASTAL MARKET

HOUSTON, Texas, March 17.—Disturbing elements were evident in the market on zero cold test lubricants during the past week. For one thing there were some quotations made below the prevailing market. Some refiners reported a slackening in inquiries.

In the case of the low quotations, it was a case of each office placing the blame elsewhere. A canvass of prices at the end of the week found all in line on quotations for print. In each instance, however, mention was made of lower offers during the week.

These lower bids were not consistent with the whole group of lubricants. Offers were for only limited amounts. From this it is taken that the offers were but efforts to move some stocks hurridly. Except for the temporary effect the low quotations are having no consideration. It is accepted as something that will right itself shortly.

Fewer inquiries were reported from only part of the refinery sales offices. While one man told of few inquiries, others reported buyers as ready as ever to do business, if asking for quotations can be taken as an indication of a desire to do business.

Weather conditions are considered responsible for the decrease in inquiries. The sales managers reporting fewer inquiries said the slackness was from the Middle West and the Eastern territory. Both have been through some bad weather and that is taken as the only cause for the lessened demand for lubricating oils. From a broad viewpoint, the market on lubricants in South Texas is steady with last week, with quotations unchanged.

KANSAS CITY MEETING OF CREDIT MANAGERS

A meeting of the credit managers of all the large refineries of the United States has been called for the Muehlbach Hotel, Kansas City, Mo., April 16-18, according to an announcement made by Frank Bunn, credit manager of the Tidal Oil Co., Tulsa, Okla. Mr. Bunn was appointed chairman of the arrangements committee for the coming meeting, at a preliminary meeting held recently in Tulsa. He asserts that several instructive speeches will be scheduled and an excellent program of entertainment will be prepared.

An attendance of about 60 men is anticipated at the Kansas City meeting. The matter of credit information interchange and other important matters, vital to the refinery credit manager, will be discussed at the meeting.

TO REOPEN CRESCENT PLANT

FORT SMITH, Ark., March 17.—The Crescent Refining Co. has contracted for a supply of crude and will reopen the refinery here which has been closed for two years. The plant will start operations on 800 barrels daily and it is anticipated that it will increase its runs in a few weeks.

OIL COMPANY SIGNS REMOVED FROM ROADS

Billboard advertising and California scenery have met on the field of battle and the scenery forces came out on top. At least the Standard Oil Co. of California has been convinced that oil advertising in the wooded and mountainous districts of beautiful and sunny California is not in keeping with the better interests of the State and as a result it has issued the following announcement:

"Convinced that highway advertising signs detract from the natural beauty of the great routes of travel of the Pacific Coast, this company has decided that it will erect no more such signs and it will immediately remove all of its signs of this nature now standing. Hereafter the company will confine the use of signs to commercial locations.

"The company feels that the splendid scenery so characteristic of nearly all of the highways of California, Oregon, Washington, Nevada and Arizona should be unmarred, and on that account is willing to sacrifice the advertising value of the signs."

There are nearly 1,200 of the company's large permament signs in California, Oregon, Washington, Nevada and Arizona. There will be cut down. The Standard Oil Co. of California was one of the first oil companies to engage in this form of rural outdoor advertising and is the first to discontinue it. The signs represent an appreciable investment, but the company is willing to sacrifice this in the interest of making the California highways more attractive, not only to the California residents, but also to the rapidly increasing number of tourists from the East who view the scenery of California by automobile, when it is visible.

COLUMBIAN LOG BOOK

A booklet that will meet with cordial reception by every oil field driller is being distributed by the Columbian Rope Co., of Auburn, N. Y. It is called the "Columbian Log Book," and contains forms for keeping a complete record of a drilling well, including a log of the formations and other necessary information such as dates of spudding and completion, amounts of each size of casing used, shots, and drilling time. The booklet is convenient in size, being 3½ inches by 8 inches, and will be of real service to the trade. In addition to the log forms there are a few pages of data concerning the Columbian manila drilling cable and other oil well cordage. The booklet may be obtained by addressing the company at the home office.

MARICOPA GASOLINE PLANT

TAFT, Cal., March 17.—With the news of the opening up and developing going on all over the Midway-Sunset Fields comes word that the Field Gasoline Co., of Huntington Beach and Torrance is constructing a large plant on the Bush property, near the Bush well on the Maricopa flats.

The work of construction is in charge of Perry Elder, who has been with the Field Gasoline Co. for two years. With the completion of the plant it will be placed in charge of Elder.

RAMSEY CASINGHEAD PLANT

LOS ANGELES, Cal., March 17.—W. R. Ramsey of Oklahoma City, head of the organization which bears his name, announces the construction of a 10,000-barrel casinghead plant, being planned for construction on Reservoir Hill near the producing wells which the company has and in close proximity to those drilling.

When a Tank Is a Bank

Putting oil in our tanks is like putting money in a bank. But unlike some banks, the original amount put in is always there, and since nothing is lost through evaporation or leakage, you do draw interest on the oil stored.

Our tank is about 50% stronger than any other due to the construction. Our 12 gauge bottom furnishes you with 12 gauge sides due to the construction. We use Armco Iron which has other materials stopped a mile for lasting qualities.

We use paint which will resist concentrated lye. Let us prove these statements to you in any way you desire.

GANTZ TANK Company
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Bolted and Welded Tanks

EASTERN REFINED MARKETS FIRM; FEELING MUCH MORE OPTIMISTIC

By N. O. Fanning

NEW YORK, March 17.—The refined oil markets in the Atlantic Seaboard territory remained firm during the past week. Feeling is much more optimistic now than a week ago. Further price advances are expected in the near future in all products.

Kerosene and gas and fuel oil are the strongest spots in the market at present. The supply of these products is diminishing in this territory. Stocks of kerosene are unchanged from a year ago, while stocks of fuel oil are 1,000,000 gallons lower. The demand for both kerosene and fuel oil is larger than ever.

Stocks of gasoline, lubricants and wax at eastern refineries show a healthy gain over last year, but supplies are not so great as to cause any alarm. Gasoline stocks show a gain of about 62,000,000 gallons, while stocks of lubs are up 5,000,000 gallons. Wax stocks show an increase over a year ago of approximately 5,000,000 pounds. The gain in stocks of lubricating oil amounts to a little over 5 per cent, in wax, 10 per cent and in gasoline, 27 per cent.

The general situation as to stocks is not so bad as it might be, however. With spring almost here, inroads should be made in stocks of gasoline and lubricants, while consumption of both kerosene and gas and fuel oil is expected to fall off.

Bulk quotations on Mid-Continent gasoline are unchanged at around 16½ cents per gallon, delivered. The firmness in the western market is expected to be reflected in the local market within a week or two.

Mexican Oil Scarce

Although the gain in production of Panuco crude oil in recent months has kept Mexico in the limelight as a producer of crude, Mexican oil on the whole is becoming increasingly hard to get. A few big companies have contracted for about all the Mexican oil in sight a year or so in advance, such as Standard Oil of New Jersey, Pan American Petroleum and the Dutch-Shell group.

As a result of the present situation, the price of both light and heavy Mexican oil has risen considerably. Light oil is quoted at Tampico for about $1.10 per bbl., although little or none is available at any figure. Heavy oil brings about 85 cents per barrel. These prices are, as near as can be ascertained, close to the current basis of contracts, but, of course, no company is willing to go on record as holding to any definite figure due to the uncertainties of the situation.

Based on present prices and carrying charges, light Mexican crude cannot be delivered at New York for less than $1.85 per barrel, and Panuco costs at least $1.50 delivered here. It is interesting to compare these figures with the price of bunker oil at New York, which is $1.60 per barrel (lighterage 6½ cents per barrel extra). Although that is the nominal quotation, dealers say that fuel oil is increasingly scarce, and that little can be had at the above price.

Inasmuch as California crude and fuel oil has gone up in price, and as Mexican oil is scarce and expensive, an advance in the price of bunker fuel oil is expected in this territory in the near future.

Charter Market Active

If activity in the tanker chartering market is any indication of the trend of oil export trade, the latter certainly looks bright at present. During the past week a good number of oil carrying ships were chartered to carry products from both Atlantic and Gulf ports to Europe, the Orient and elsewhere. Among them was a French tanker of 4,000 tons to carry oil from the Atlantic to Mediterranean ports. The steamer Maya (Italian), 2,198 tons net, was chartered to carry gas oil from the Gulf to Italy (two trips), at 33s per ton, March and April loading.

Other fixtures include: Steamer Weir, case oil, Gulf to China and Japan, 175,000 cases at about 28 cents, May loading. Steamer Tiverton (Br.), 5,000 tons, lubricating oil, New York to Antwerp and Rouen, at 45s, March-April loading. A steamer, 75,000 barrels' capacity, crude oil, California to New York, at $1 per barrel, prompt loading. A 5,000-ton tanker, refined oil and gasoline, North Atlantic port to Scandinavia, 48s per ton.

Receipts from Gulf Gain

Receipts of crude and refined oil by water at Atlantic ports from the Gulf Coast continue large, averaging 173,000 barrels daily during the week ended March 14, against 169,000 barrels the week before. These averages contrast with a daily rate of 121,000 barrels in January. Receipts from the Pacific Coast were the smallest since the week ended December 28, 1923, amounting to 112,000 barrels daily. The previous week's receipts averaged 164,000 barrels daily.

The following table shows estimated daily average receipts of crude and refined oil at Atlantic Coast ports by water from the Gulf and Pacific Coasts of the United States, and imports from Mexico and other countries for the last two weeks; also monthly record back to July 1, 1923 (figures in barrels):

From—	Week Ended Mar. 14	Mar. 7
Gulf Coast	173,000	169,000
Pacific Coast	112,000	164,000
Mexico, etc.	141,000	71,000
Total daily average	426,000	404,000

Monthly Record (Daily Averages)

	Gulf	Pacific	Imports	Total
Feb., 1924	169,000	172,000	114,000	455,000
January	121,000	163,000	79,000	363,000
Dec., 1923	184,000	153,000	119,000	456,000
November	186,000	141,000	109,000	436,000
October	200,000	164,000	134,000	498,000
September	165,000	146,000	109,000	420,000
August	176,000	170,000	110,000	456,000
July	160,000	138,000	116,000	414,000

Highest monthly receipts by water since July 1, 1923, 15,438,000 barrels, registered in October, 1923.

KEROSENE WEAKER IN EASTERN OIL MARKET

OIL CITY, Pa., March 17.—With the exception of gasoline and kerosene, the condition of the refined market during the past week in the northwestern Pennsylvania territory was very satisfactory and the refiners are well pleased with the outlook.

Kerosene is the worst feature of the market at the present time, being very soft. The reason for this is a mystery to the local refiners as the use of incubators, which is a considerable item, has started and it is very close to spring plowing time.

Wax is probably the strongest item unless it be steam refined goods. One of the largest companies in the country is in the market for both these products for export and in the case of wax is willing to buy almost any grade. However, the market is barren and there is none to be had in this district.

The demand for steam refined is also tremendous and the prices have been advancing steadily during the week. The increasing price has sent the prices of filtered goods up, although there has been no demand for the latter, buyers taking it in preference to steam refined only because the price proved more attractive. Much of this demand for steam refined goods is for export purposes. None of the refineries in this section has steam refined goods in storage which are not sold.

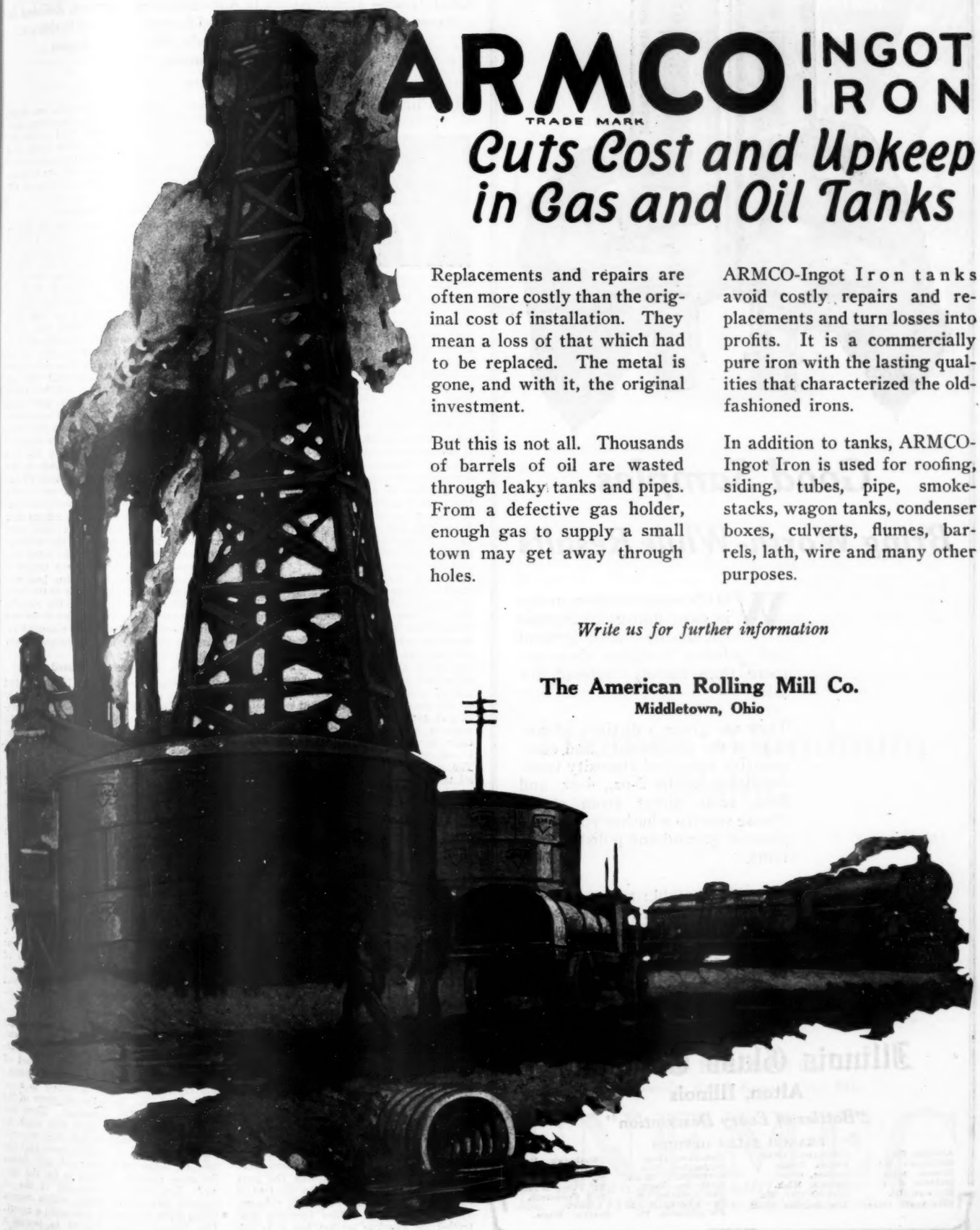
Neutrals are soft, the demand for them not having opened up yet. They should show considerable improvement in the next week or two.

Gasoline is very soft as a result of the weather conditions, but this was to be expected after the recent blizzard. The sales at the refineries have decreased greatly.

ARMCO INGOT IRON

TRADE MARK

Cuts Cost and Upkeep in Gas and Oil Tanks



Replacements and repairs are often more costly than the original cost of installation. They mean a loss of that which had to be replaced. The metal is gone, and with it, the original investment.

But this is not all. Thousands of barrels of oil are wasted through leaky tanks and pipes. From a defective gas holder, enough gas to supply a small town may get away through holes.

ARMCO-Ingot Iron tanks avoid costly repairs and replacements and turn losses into profits. It is a commercially pure iron with the lasting qualities that characterized the old-fashioned irons.

In addition to tanks, ARMCO-Ingot Iron is used for roofing, siding, tubes, pipe, smokestacks, wagon tanks, condenser boxes, culverts, flumes, barrels, lath, wire and many other purposes.

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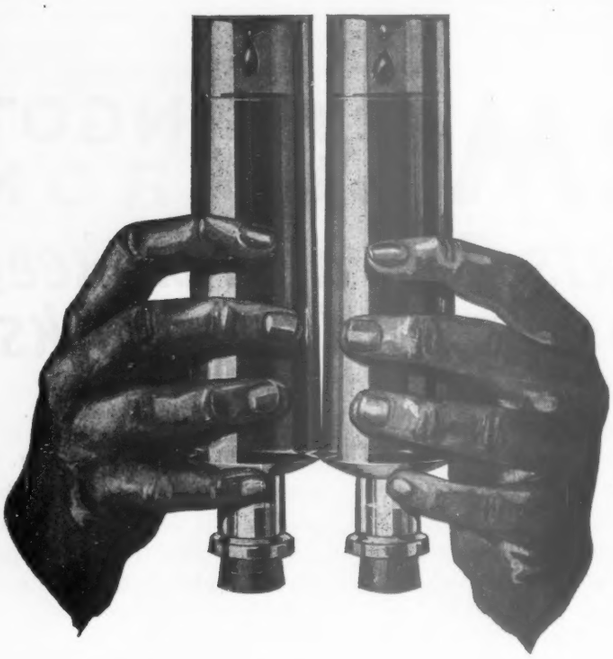

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WHEN samples are sent out in clear flint glass Sample Oil Bottles with ground and polished bottoms they are more than merely "offered for sale."

They are given a distinct advantage in the preliminary and comparative color and viscosity tests. Available in the 2-oz., 4-oz. and 8-oz. sizes direct from stock. Please specify whether you desire plain or ground and polished bottoms.

We are also able to supply you from our own Cork Factory with extra-long, high grade, tapered corks to fit your bottles.

Write our nearest Branch. They will be glad to assist you with your bottle problems.

Illinois Glass Company

Alton, Illinois

"Bottles of Every Description"

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Atlanta, Ga. Baltimore, Md. Boston, Mass. Buffalo, N. Y. Chicago, Ill. Cincinnati, Ohio
Cleveland, Ohio Dallas, Texas Denver, Colo. Detroit, Mich. Kansas City, Mo. Los Angeles, Calif.
Memphis, Tenn. Milwaukee, Wis. Minneapolis, Minn. Nashville, Tenn. New Orleans, La. New York, N. Y. Philadelphia, Pa.
Pittsburgh, Pa. Portland, Ore. St. Louis, Mo. St. Paul, Minn. San Francisco, Calif. Seattle, Wash.

CHICAGO JOBBERS LOADED WITH STOCKS

Chief Trouble Accumulations to Anticipate Rising Prices. Refining in Excess of Demand. Kerosene Trend Lower. Fuel Oil Lethargic. Gas Oils Uncertain. Lubricants Hit. Tank Wagon Confusion Counties

By J. B. Waldo

CHICAGO, March 17.—There is a lot of complaint regarding weather and snows, but when you come right down to the facts the conditions are not so different from what they usually are at this time of the year. Roads are almost always bad in March and the demand for gasoline more or less limited by such conditions. It is probably a little worse this year than last but last year was a bad one for the trade in that the weather was fine during the early months of the year and cold and disagreeable through June. It was this period of bad weather during the late spring and early summer that made much of the trouble by causing an accumulation of gasoline at the plants when they were operating at a rate that was planned to care for a larger consumption than actually occurred.

One of the greatest troubles right now is the accumulation not at the refineries but in the hands of jobbers who ordered during January at a rate far beyond their consumption in anticipation of a higher tank wagon market. They got the higher market in the fore part of February. They also got a lot of snow and they have the gasoline yet. One of the large refiners says that they have hardly a customer that does not report that they have cars on the track and that they could not take in any more gasoline until the demand caught up with their supplies. These cancellations of shipping instructions do not sound good to refiners but what can they do? One little station near this city had two cars on the track and more coming and their sales they report are just about 25 per cent of what they should be at this season of the year simply because the motorist cannot get anywhere. Motorists of the writer's acquaintance that do not use their car for business have not taken it out of the garage for several weeks. The condition is universal and that is all that there is to the situation.

Export Demand Over

There is no demand for anything but the New Navy gasoline and a small percentage of the higher test gasoline. The 56-58 grade is not being offered in this market and most of the refiners are undoubtedly holding the product for the first of April when it can be applied on contracts if they so desire. The export demand is over for the time being, according to the companies that do that business here, but some of them have purchased for their storage when the prices were favorable. The best price that a leading export organization would consider was 10½ cents for New Navy and they claim they were able to get some at that price. Reports are received of large contracts for natural gasoline but the market is just about steady here. Blends are very quiet. There have been some attempts made to induce the larger companies to take a considerable quantity for storage or export but the efforts did not meet with success. The men approached intimated it was useless for them to help the refiner who could not and would not help himself by not running in excess of demand.

There has been some discussion here in an informal way regarding the part that freight rates have had in the loss of business with the Mid-Continent refiners. The Mid-Continent refiner formerly controlled the gasoline market but it is different now. Many of them seem to think, and this view has been presented here that the whole trouble is with the freight rates. Now there is no doubt that freight rates play an important part in bounding the possible field of any industry but there are other items and among them may be considered even more important than the rates is the increase of the refineries in other sections of the country.

Refinery Capacity

This increase is shown in the report of the Bureau of Mines. On January 1, 1922, two years ago, the bureau issued a list of refineries in the United States and gave the total at 509 built and building. On January 1, 1924, in its monthly report it gave the number of refineries in operation as less than one-half the number listed two years previously but gave the capacity of these refiners as equal to the capacity of the full 509 plants reported two years previously. What had happened? The refiners of the East, West and Gulf Coast and the Middle West had built new plants or increased their previous capacity. All can remember when the Standard Oil Co., Indiana, and the Standard Oil Co., Ohio, would go into the field and take contracts for thousands of cars for the season, when they took 75 per cent of the gasoline from the Cowden plant. They are selling their own product to the customers of the refiners from whom they formerly made their purchases. It is merely a matter of industrial evolution in which the fittest survive and fitness is largely a matter of a big bank balance. It has been said of the tanning industry and of the chemical industry that half of the concerns would have to quit business if the rest were to live. Too rapid industrial expansion causes many bad moments in any industry.

Kerosene in Demand

Kerosene has been in better demand although it is close to the end of the season when it is most used. Undoubtedly some of the activity is because the number of jobbers with contracts covering kerosene as well as gasoline are comparatively few. At the close of the 1923 season when the hunt for marginal contracts was at its height a number of those most active in making gasoline contracts "ducked" the kerosene end for the reason that they were afraid there would be a shortage and the prices would be too uneven if the supplies were adequate. Some refiners argued this very strongly one saying there would be a time when no refiner would have any kerosene for sale except at a gasoline price. They mistook a temporary demand due to a most unusual circumstance or chain of circumstances for a permanently increased call for kerosene and also figured that the extension of the cracking process would reduce the supply. The price has hovered around 5 cents to the jobber with a tendency towards a lower level.

Distillates have dropped off amazingly as to the consumption. One local dealer stated that since the milder temperatures prevailed his sales had dropped off 75 per cent including all the burning oils from prime white distillate to a refinery fuel oil. It is the old story of the coal man and the consumer. There are a few users of coal that will stock up in the early summer but the majority wait until fall. It would seem that the sale of domestic burner oil will follow the same course. Contracts for the winter? Yes, but the majority of the oil burners have small tanks which require filling more frequently than once a month. The burner people expect to install a large number of oil burners during the summer but they will probably go on claiming that it is cheaper to burn oil

than coal until they seriously injure the reputation of the entire burner industry.

Fuel oil is still lethargic so far as any big business is concerned. The tendency is to buy for short periods right now, the buyers being of the opinion prices will not advance for fuel oil and also being rather insecure as to the future demand for their own products. The outlook for fuel oil is not favorable to higher prices and some oil men are predicting lower rates within a short time. One said that a contract for the summer at $1 would be very favorable before the end of the period to the seller. Smackover crude the dealers claim is firm. The larger marketers State the stock of distress oil is practically used up and that the market now must be on the basis of $1 at the wells with pipe line charges, treatment and handling costs added. The Standard Oil Co., Louisiana, is said to be increasing its runs and is cracking the crude, selling the fuel oil as a bunker fuel. The demand here is practically unchanged and the prices are now held at better than $1.00. Most of the crude delivered here is on contracts for large quantities.

Gas Oil Uncertain

Gas oil is showing a little better demand right now but it may be temporary. There were a number of sales of quantities at around 3¼ cents and late buyers stated it was hard to get supplies for early delivery. The tendency seemed to be a little stronger but it is not pronounced and the demand seems rather uncertain yet.

Lubricants

Lubricating oils have been hit to some extent by the slow consumption of motor oils. The situation that has made the demand for gasoline so slow has been reflected in the lubricating market but most of the refiners are rather short of supplies and feel that a little later there will be as much if not more demand than last year. The export movement continues and Texas plants are said to be well sold up with contracts ahead. The industrial demand continues steady and large and prices for all grades are firm, with the tendency to expect higher prices. Pennsylvanin lubs have advanced and supplies of these are light.

Tank Wagon Doubt

Tank wagon markets are nominally unchanged. The word nominally is used because there is some doubt as to what is the tank wagon market in this city. The Standard, Sinclair and Roxana call the tank wagon market 18 cents. The Texas Co. calls it 15¼ cents and some of the smaller distributors are holding for the one and others for the other. Marginal contracts generally state that the governing price is the highest standard tank wagon price which is 18 cents. The sliding scale is called a quantity price and while there have been reports that a still lower figure for a larger quantity, say of 13¼ cents for deliveries at one time of more than 900 gallons, would be made, this is denied officially and there is no evidence from the outside that any lower price is being made than the 15¼ cents for 500 gallons and over. The Texas Co. and the Roxana Petroleum Corp., have made a station price of 19 cents but this move has not been followed by the others. The price cutters have rushed to the department of justice and have tried to make it appear that the price reductions were for the purpose of putting them out of business. It was "fine business" so long as they made the cuts and stole away customers by so doing. It was "restraint of trade" when the larger companies met those cuts and got some of their customers back again. There is not the slightest doubt that these price cutters now are sorry that they played the game quite so strong. One of the leaders said to the writer that there was nothing in this price cutting game and that he was through and was going to stick to the markets hereafter. What he wants is for the prices to go back to where they were and he will try and get business by other methods than price cutting.

There has been some attempt to link the Roxana Petroleum Corp., up with this price cutting move but Manager Evans states they have only sold one of the companies that were implicated and in every way have tried to maintain the market. He showed the contract with one concern that is in the price cutting deal and the quantity and the marginal contract are much less than has been stated. The concern would be selling below cost at the 500-gallon price but there are refiners who have sold to that concern at prices as low as 10¼ cents and with this as a refinery cost the gasoline in the firm's tanks did not cost them over 13 cents which is 1½ cents less than the gasoline would have cost them on a marginal contract.

Regarding the marginal contracts they will not be made so widely next year as this if the expressions of both refiner and jobber are any criterion. They have not proven satisfactory unless they reflect the market changes and if they do reflect the market why have a contract except for having an established source of supply. An agreement to sell at the market and to buy at the market with a minimum and maximum delivery each month would answer every purpose provided they could establish some mutually satisfactory method of determining what was the market at any time and place. A case in point is the Savannah Naval Stores Market. The daily transactions are small; it is not the largest market but it has been accepted as making the market price and the industry bases its prices for each day on the quotations of the Savannah exchange for the previous day at 2 o'clock p. m., the close of the day's trading. It is simply a measuring stock and it is no uncommon thing to have dealers make prices of so much under the Exchange price for that day.

CATERPILLAR SCHOOL IS LARGELY ATTENDED

More than 200 men from every section of the United States east of the Rockies attended the "Caterpillar" service school held recently by the Holt Manufacturing Co. This school, which is conducted annually by the company for the benefit of owners, users, operators and mechanics who desire to obtain practical information about the lubrication, care, adjustment and repair of the various models of "Caterpillar" tractors, was originated at the suggestion and under the inspiration of M. M. Baker, vice president and general manager, and H. H. Chambers, director of service of the Holt Manufacturing Co., and has become so successful that plans are now being perfected for one or more additional schools to be held during 1924. The constantly increasing demand for the instruction provided by the school proves it a very real service to all users of tractors.

In order to make the instruction as practical as possible, cut-away motors, transmissions, clutches, final drive units, magnetos, carburetors, vacuum tanks, etc. have been prepared, thereby enabling the students not only to make the adjustments of the various parts, but to actually see the results of proper and improper methods. The personnel carrying on the work also includes men having years of factory and field experience.

Information concerning the school may be obtained by addressing the home office of the company at Peoria, Ill.

FISH TAIL BREAK-OUT BLOCK

The Titusville Iron Works Co. of Titusville, Pa., is now presenting through the Continental Supply Stores a new specialty for rotary drilling, a break-out block for screwing and unscrewing fish tail bits.

The block is simply dropped into the rotary table after the drive bushing has been removed and the table is rotated to either screw or unscrew in combination with the tongs, as illustrated. Besides the square design shown, the block is also made in other designs to fit different types of tables.

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When an ALUMINUM Paint finish is desired, we recommend

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The bronze pigment in this paint, coupled with pure linseed oil, gives a bright metallic finish which is a natural, efficient heat deflector. It cuts down evaporation losses and checks vapor formation, when used on tanks containing gasoline or high gravity oils.

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NORTH CENTRAL TEXAS

(Continued from Page 44)

drilling at 1,355 feet; Drillers Development Co.'s No. 1 Douglas, running 6⅝-inch casing at 930 feet; Gulf Production Co.'s No. 2-A Douglas, bailing and testing an oil sand at 1,646 feet; Kruger and others' No. 8 Waggoner, shot with 10 quarts a broken sand at 1,850 feet, cleaning out. Magnolia Petroleum Co.'s No. 7 Douglas, drilling at 1,825 feet; Mansfield and others' No. 3 Jennings, resetting 6⅝-inch casing on top of a broken sand at 1,700 feet; Rowe Drilling Co.'s No. 3 Waggoner, drilling at 1,050 feet; American Refining Co.'s No. 1 Jeff Waggoner, at 1,675 feet; Bowen and others' No. 1 Fassett, drilling in rock at 1,802 feet; Chenault and others' No. 1 McCorty, drilling at 800 feet; Cowling and others' No. 2 Seay, drilling in brown shale at 1,165 feet; Eureka Production Co.'s No. 8 Waggoner, drilling at 1,785 feet; Gulf Production Co.'s No. 7 Jennings, at 1,785 feet; No. 20-A Burnett, 200 feet of oil in the hole from a sand at 1,652 feet; Harrell and others' No. 1 Seay, drilling at 1,145 feet; Lanning and others' No. 1 McCarty, pulling 5⅛-inch casing to drill deeper at 1,375 feet; Magnolia Petroleum Co.'s No. 24-A Waggoner, drilling in shale at 905 feet; No. 32-A Waggoner, will test a sand showing oil at 1,635 feet; No. 2 Pere Waggoner, fishing for casing at 1,820 feet; Rio Bravo Oil Co.'s No. 9-A Waggoner, drilling an oil sand at 1,665 feet; Ryan Petroleum Co.'s No. 13 Nance, bailing and testing oil sand at 1,265 feet; Shaw and others' No. 1 Seay, bailing an oil sand with 40 feet of oil in the hole at 1,200 feet; Sproles and others' No. 1 Fisher, setting 5⅛-inch casing on top of an oil sand at 1,975 feet; Underwood Drilling Co.'s No. 1 McCarty, drilling at 1,370 feet; Wiley and others' No. 1 Jeff Waggoner, drilling in hard shale at 1,790 feet; Texhoma Oil & Refining Co.'s No. 2-C Burnett, bailing an oil sand at 1,825 feet; Hammon and others' No. 1 Ferguson, light show of oil from a sand at 1,805 feet; Kruger and others' No. 1 Allen, drilling at 1,480 feet; Scott Bower's No. 1 Munger, drilling in shale at 1,875 feet; Comac Oil Co.'s No. 2 Terhune, drilling at 1,415 feet; Hill and others' No. 1 Overby, rigging to pump and test an oil sand at 1,495 feet; Maer and others' No. 1 Kemp, drilling in shale at 1,695 feet; Simms Oil Co.'s No. 1 Dutton, showing estimated 8 bbls. of oil from a sand at 1,825 feet.

Wilbarger County

Completions: Ferguson and others' No. 1 Waggoner, 62 bbls. at 1,530 feet.

Drilling: Dennis and others' No. 1 Beckett, may be abandoned at 1,050 feet; Ferguson and others' No. 2 Waggoner, swabbing 125 bbls. daily from a sand at 1,540 feet; Robinson and others' No. 1 McCaleb, shut down for orders at 2,504 feet; Matlock and others' No. 1 Waggoner, set 12½-inch casing and cleaning out at 585 feet; Noble Oil Co.'s No. 1 Waggoner, drilling at 1,270 feet; South Vernon Oil Co.'s No. 2 Stephens, fishing for tools at 525 feet; No. 3 Stephens, drilling at 515 feet; Texas Pacific Coal & Oil Co.'s No. 1 Smith, spudding.

Archer County Completions

Completions: The Texas Co.'s No. 8 Parrish, 70 bbls. at 1,595 feet; Boler and others' No. 1-B Wilson, dry at 1,668 feet; Camp Oil & Gas Co.'s No. 7 Wilson, 250 bbls. at 1,605 feet; Chenault and others' No. 1 Jackson, dry at 1,805 feet; Clark and others' No. 1 Miller, 190 bbls. at 1,340 feet; Dale and others' No. 8 Wilmot, 80 bbls. at 1,600 feet; same company's No. 7 Wilson, dry at 1,450 feet; Empire Gas & Fuel Co.'s No. 4-B Wilson, 100 bbls. at 1,595 feet; same company's No. 5-B Wilson, 90 bbls. at 1,590 feet; same company's No. 6-B Wilson, 90 bbls. at 1,593 feet; Golding and others' No. 1 Lauster, dry at 1,550 feet; Hardeyeste and others' No. 3 Parrish, dry at 1,620 feet; Kentucky Oil Corp.'s No. 2-B Wilson, 85 bbls. at 1,395 feet; same company's No. 1-C Wilson, 250 bbls. at 1,595 feet; Knight and others' No. 1 Seay, dry at 1,810 feet; Oil Investment Co.'s No. 1 Mrs. Montgomery, dry at 1,857 feet; Petroleum Production Co.'s No. 1 Perkins, dry at 1,970 feet; Raznor and others' No. 1 Netherton, dry at 1,776 feet; Sibley and others' No. 8 Wilmot, 35 bbls. at 1,[illegible] feet; Texhoma Oil & Refining Co's No. 1 Wilson, dry at 1,717 feet; same company's No. 1-C Wilson, 325 bbls. at 1,600 feet; Willis and others' No. 1 Jackson, 35 bbls. at 1,800 feet.

Drilling in Archer County

Drilling: Cavin and others' No. 1 Hardegree, shut down for casing on top of a broken sand showing oil at 1,450 feet; The Texas Co.'s No. 1 McDavid, drilling in shale at 1,285 feet; No. 1 Norred, drilling in shale at 300 feet; No. 9 Parrish, will swab and test an oil sand at 1,595 feet; No. 10 Parrish, drilling in lime rock at 1,355 feet; No. 11 Parrish, drilling in shale at 1,315 feet; No. 1 Turbeville, drilling a sandy lime at 1,[illegible] feet; American Refining Co.'s No. 1 Ward, preparing to pump and test a sand at 952 feet; Barton and others' No. 4 Parrish, drilling in shale at 1,345 feet; Boler and others' No. 4 Wilmot, rigging to pump and test oil sand at 1,595 feet; No. 7 Wilson, swabbing 300 bbls. at 1,[illegible] feet; No. 8 Wilson, swabbing 550 bbls. at 1,580 feet; No. 9 Wilson, swabbing 750 bbls. at 1,585 feet; Bridwell and others' No. 4-B Wilson, drilling at 1,[illegible] feet; Camp Oil & Gas Co.'s No. 9 Wilson, rigging to swab and test an oil sand at 1,595 feet; Chenault and others' No. 4 Richardson, drilling at 615 feet; Comet Petroleum Co.'s No. 11-A Ferguson, shut down at 1,750 feet; Danciger and others' No. 1 Maxwell, drilling in shale at 1,625 feet; Darr and others' No. 1 Ferguson, drilling at 1,700 feet; Dillday and others' No. 1 Ferguson, coring a broken lime at 2,625 feet; Dorsin and others' No. 5 Wilson, ratholing at 1,540 feet; Empire Gas & Fuel Co.'s No. 2-C Wilson, bailing and testing an oil sand at 1,613 feet; No. 7-B Wilson, drilling at 1,545 feet; No. 1 Parker, drilling in shale at 1,620 feet; Erwin and others' No. 1 Wilson, 200 feet of oil in the hole at 1,640 feet; Gohlke and others' No. 2 Wilson, rigging to pump and test an oil sand at 1,[illegible] feet; Gwynn and others' No. 3-B Wilson, will pump and test an oil sand at 1,595 feet; No. 4-B Wilson, ratholing at 1,465 feet; Itan Oil Co.'s No. 1 K. & K., bailing an oil sand at 1,782 feet; Jetter and others' No. 1 White, shut down for orders on top of an oil sand at 1,620 feet; Kentucky Oil Corp.'s No. 3-B Wilson, swabbing 500 bbls. daily from a sand at 1,570 feet; No. 2-D Wilson, drilling an oil sand at 1,585 feet; King and others' No. 1 Grounds, drilling in shale at 1,605 feet; Langford and others' No. 6 K. & K., ratholing at 1,600 feet; Lanning and others' No. 2 Parish, lost casing seat on top of an oil sand at 1,[illegible] feet; Litchfield and others' No. 2 Miller, bailing and testing a sand showing some oil at 1,380 feet; Maer and others' No. 4-B Wilson, testing an oil sand at 1,[illegible] feet; Murchison and others' No. 1 Wilson, rigging to bail and test a sand at 1,623 feet; Norton and others' No. 1 Pease, tested water at 1,450 feet; Panhandle Duke Oil Co.'s No. 2 Parrish, setting 6⅝-inch casing at 1,587 feet; R. M. F. Oil Co.'s Nos. 5-B, 6-B, 7-B, 8-B and 9-B Wilson, each swabbing from 150 bbls. up and not yet completed at 1,590 feet; No. 10-B Wilson, ratholing at 1,530 feet; No. 13-B Wilson, topped a producing sand at 1,505 feet; Shappell and others' No. 6 Jackson, swabbing 325 bbls. from a sand at 1,[illegible] feet; Staley and others' No. 1-C Wilson, drilling an oil sand at 1,590 feet; No. 1 K. & K., testing an oil sand at 1,[illegible] feet; Swastika Oil Co.'s No. 2-C Richardson, hole full of oil from a sand at 1,320 feet; Texhoma Oil & Refining Co.'s No. 1 Sterrett, drilling a lime formation at 1,745 feet; No. 8-B Wilson, swabbed 380 bbls. at 1,600 feet; No. 2-C and 3-C Wilson, swabbing an oil sand at 1,600 feet; Underwood Drilling Co.'s No. 1-B Wilson, rigging to [illegible]

and test an oil sand at 1,620 feet; Verschoyle and others' No. 2-B Wilson, rigging to pump an oil sand at 1,390 feet; Dr. Wallace's No. 13 K. & K., drilling without any showing at 1,620 feet; Wall Duke Oil Co.'s No. 1 Garvey, drilling at 1,540 feet; Wood and others' No. 2 Wilson, cemented casing on top of an oil sand at 1,595 feet.

Young County

Completions: Peter Oil Co.'s No. 4 Kemp, 30 bbls. at 1,070 feet; Whitehead and others' No. 1 Graham, flowing 90 bbls. daily at 4,260 feet.

Drilling: Bashara and others' No. 1 Marshall, drilling in shale at 1,460 feet; Davis and others' No. 1 Benson, drilling in rock at 400 feet; Dyer and others' No. 1 Gilmore, drilling at 840 feet; Empire Gas & Fuel Co.'s No. 1 Williams, drilling in blue shale at 2,155 feet; Mid-Kansas Oil & Gas Co.'s No. 1 Moren, drilling in shale at 3,035 feet; Nash and others' No. 1 Bower, drilling at 2,050 feet; North American Refining Co.'s No. 3-B Scott, at 2,600 feet; Seaboard Oil & Gas Co.'s No. 5-A Hughes, at 2,585 feet; No. 4-B Hughes, drilling in brown shale at 780 feet; Shamrock Oil Co.'s No. 2 Glidwell, drilling at 1,902 feet; No. 3 Glidwell, drilling at 565 feet; Sinclair Oil & Gas Co.'s No. 3 Moren, fishing for tools at 4,100 feet; Whitehead and others' No. 1 Johnson, fishing for casing at 4,229 feet.

Stephens County

Completions: Ewing and others' No. 1 Martin, 50 bbls. at 3,725 feet; Mid-Kansas Oil & Gas Co.'s No. 1 Williams, 40 bbls. at 3,320 feet; Hughes and others' No. 3 Gandy, 6,000,000 feet of gas at 3,180 feet; Scott and others' No. 2 Davis, 75 bbls. at 3,250 feet; Walker & Caldwell's No. 2 Jones, 5,000,000 feet of gas at 3,235 feet.

Drilling: Critten and others' No. 2 Cobb, drilling in shale at 2,100 feet; No. 1 Cunningham, drilling in rock at 1,000 feet; Gray and others' No. 1 Ward, underreaming 8-inch casing at 2,230 feet; Mid-Kansas Oil & Gas Co.'s No. 12 Hill, drilling at 2,920 feet; No. 2 Lowe, fishing for tools at 2,405 feet; Pierce and others' No. 1 Cruddington, drilling with a hole full of water at 1,730 feet; Prairie Oil & Gas Co.'s No. 15 Atkins, underreaming 6-inch casing at 3,070 feet; Rochelle and others' No. 2 Sweeney, fishing for casing at 3,216 feet; Texas Pacific Coal & Oil Co.'s No. 2 Rogers, drilling at 2,400 feet; Atlantic Oil Production Co.'s No. 6 Dunlap, drilling in lime at 3,310 feet; Magnolia Petroleum Co.'s No. 4 Brown, drilling at 3,820 feet; the Mahlstedt & Mook Oil Co.'s No. 1 Parks, spudding; Oakwood Oil Syndicate's No. 1 Thompson, drilling at 675 feet; Pender Production Co.'s No. 2 Davis, drilling in gray lime at 3,090 feet; No. 3 Davis, drilling at 2,920 feet; Quakins Petroleum Co.'s No. 1 Bruce, fishing for a bit at 2,030 feet; Swensondale Oil Co.'s No. 1 Herrington, cleaning out at 3,330 feet; The Texas Co.'s No. 6 Heathly, drilling at 2,710 feet; No. 1 Jones, drilling at 840 feet; No. 38-A Parks, drilling in blue shale at 2,575 feet; Texas Fidelity Oil Syndicate's No. 6 Gardenshire, fishing for casing at 1,505 feet; Thompson and others' No. 2 Williams, drilling at 650 feet.

Eastland County Completions

Completions: Sloan and others' No. 1 Ray, 100 bbls. at 3,295 feet; Dorothy Oil Co.'s No. 1 Brelsford, 10 bbls. at 1,240 feet; McLester and others' No. 2 Westmoreland, 20 bbls. at 2,850 feet; Panhandle Refining Co.'s No. 12 Hightower, 400 bbls. at 1,210 feet.

Drilling: Brothers Oil Co.'s No. 2 Westmoreland, drilling at 1,050 feet; Harrison and others' No. 2 Tidwell, drilling in shale at 2,905 feet; Mook Texas Oil Co.'s No. 3 Harrell, drilling at 3,110 feet; No. 2 Sibley, drilling at 3,200 feet; Panhandle Refining Co.'s No. 13 Hightower, drilling in brown shale at 500 feet; Rosenfield and others' No. 3 Gilbert, drilling at 405 feet; States Oil Corp.'s No. 13 Harrell, drilling in shale at 705 feet; Dixie Oil Co.'s No. 1 Waggoner, drilling at 900 feet; The Texas Co.'s No. 7 Hightower, drilling in blue shale at 1,080 feet; No. 8 Hightower, drilling at 415 feet; Burkett and others' No. 1 Hatton, drilling in mud at 315 feet; Continental Oil Co.'s No. 1 Sneed, drilling at 1,525 feet; Duquesne Oil Co.'s No. 2 Johnson, spudding; Turner and others' No. 1 Harwood, shot failed to go off, cleaning out above shot at 3,300 feet.

Wildcats

Throckmorton County — Completions: Haile Tex Oil Co.'s No. 1 Wood, dry at 775 feet.

Palo Pinto County—Completions: Texas Pacific Coal & Oil Co.'s No. 1 Robinson, dry at 3,580 feet.

Drilling: Texas Pacific Coal & Oil Co.'s No. 145 Stewart, drilling with a hole full of water at 675 feet; Upham and others' No. 4 Watson, drilling in black lime and showing a heavy gas flow at 3,395 feet; Harris and others' No. 1 Weldon, drilling at 3,325 feet; Fultz and others' No. 1 McGee, at 745 feet; Hess and others' No. 1 Croker, at 3,680 feet; Jack Dalton Oil Co.'s No. 5 Dalton, at 305 feet; Lowe and others' No. 1 Chenault, spudding; Moore and others' No. 2 Boles, drilling in shale at 1,230 feet; Scott and others' No. 1 River Bed, fishing for lost tools at 3,712 feet; Singleton and others' No. 1 Holt, cleaning out at 4,200 feet; Upham and others' No. 1 Hartwell, drilling with a hole full of water at 1,550 feet; Wheeler and others' No. 1 Wheeler, drilling at 1,115 feet.

Shackelford County—Drilling: Brown and others' No. 1 Moberly, drilling at 1,080 feet; Donnelly and others' No. 1 Brooks, fishing for casing at 2,640 feet; Hill and others' No. 1 Elliott, drilling by tools at 1,008 feet; Humble Oil & Refining Co.'s No. 3 Lynch, hole full of water and drilling at 3,535 feet; No. 5-A Poindexter, sidereaming at 3,350 feet; Illsing and others' No. 1 Poindexter, sidereaming 10-inch casing at 1,250 feet; Landreth and others' No. 3 Brazzelle, running 8-inch casing at 1,950 feet; No. 2 Lynch, drilling at 1,300 feet; Magnolia Petroleum Co.'s No. 11 Poindexter, set 5-inch casing at 3,070 feet; Simms Oil Co.'s No. 1 Elliott, drilling with a hole full of water at 2,140 feet.

Callahan County — Drilling: Burleson and others' No. 2 Eisenhour, drilling in shale at 1,715 feet; Dutton and others' No. 3 Cathey, underreaming 10-inch casing at 630 feet; Sherron and others' No. 1 Cathey, running 8¼-inch casing at 1,012 feet; Urban and others' No. 1 Chilson, underreaming at 1,600 feet.

Mitchell County—Drilling: Cary and others' No. 1 Morrison, drilling at 2,760 feet; California Co.'s No. 1 Morrison, cementing casing at 4,200 feet; No. 5 Abrams, drilling at 2,310 feet; No. 2 Morrison, drilling in gray lime with a show of oil at 2,975 feet; No. 2 Miller, drilling in shale at 2,965 feet; No. 2 Lesure, drilling at 2,405 feet.

Baylor County—Drilling: Cranfill and others' No. 1 Mills, drilling in mud at 995 feet; Sunshine State Oil & Refining Co.'s No. 1 Wallace, drilling at 705 feet; Wurtz and others' No. 1 Porter, at 1,100 feet.

Clay County Operations

Clay County — Drilling: Cumley and others' No. 1 Stine, rigging up a rotary; Crude Oil Production Co.'s No. 1 Kinder, pulling 5⅞-inch casing at 1,060 feet; Gulf Production Co.'s No. 1-A Boddy, drilling in rock at 2,865 feet; No. 3 Worshaw, setting 5⅞-inch casing at 3,310 feet; Lone Star Gas Co.'s No. 3 Martin, cementing 8¼-inch casing at 1,660 feet; Magnolia Petroleum Co.'s No. 10 fee, cementing 6⅝-inch casing at 1,345 feet; Menky and others' No. 1 Hunt, drilling at 610 feet; Scalling Oil Corp.'s No. 1 Scalling, drilling in blue shale at 1,840 feet; Seaboard Oil & Gas Co.'s No. 1 Zihlman, drilling at 1,975 feet.

Montague County—Completions: Amerada Oil Corp.'s No. 1-A Beasley, dry at 3,304 feet.

Drilling: Gulf Production Co.'s No. 1

Steel

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Open Hearth New Billet Reinforcing Bars (Plain, deformed)
Rerolled Rail Carbon Reinforcing Bars
Bands
Pull Rods
Sucker Rods
Track Spikes
Track Bolts
Rivets
Merchant Bar Iron
Machine and Carriage Bolts
Still Bolts
Lag Screws
U. S. S. Hot Pressed Nuts
Special Bolts
Rods (Threaded, plain, forged, upset)
M. C. B. Car Forgings
Mine Car Forgings
Oil Well Forgings

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Sheffield Station, Kansas City, Mo.

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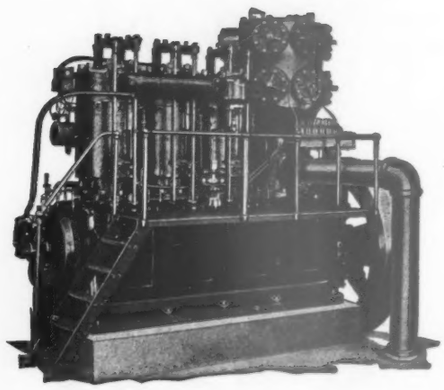

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Benton, recementing 5-$\frac{3}{16}$-inch casing at 3,393 feet; Mascho Oil Co.'s No. 1 Howard, drilling a water sand at 2,480 feet; Spencer and others' No. 1 Wilson is underreaming 8¼-inch casing at 1,380 feet.

Carson County—Drilling: The Texas Co.'s No. 2 Burnett, running 8¼-inch casing at 2,750 feet; No. 1 Mary Burnett, running 10-inch casing at 1,590 feet; No. 2 Mary Burnett, underreaming and lowering 15½-inch casing at 325 feet; Gulf Production Co.'s No. 3-A Burnett, pumping some oil at 3,145 feet; Sink and others' No. 3 Burnett, drilling in lime at 2,785 feet;

Hutchinson County — Drilling: Coline Oil Co.'s No. 1 Sandford, waiting on the erection of storage tanks at 3,219 feet; Humphreys Oil Co.'s No. 1 Johnson, fishing for tools at 2,585 feet; Montgomery and others' No. 1 Johnson, cementing 10-inch casing at 1,935 feet; Producers & Refiners Corp.'s No. 1-B Bivens, drilling in lime and showing 50,000,000 feet of dry gas at 2,627 feet; Watchorn and others' No. 1-A Cable, running 10-inch casing at 1,835 feet; Wilson and others' No. 1 Johnson, drilling at 355 feet.

Gray County—Drilling: Holmes and others' No. 1 Moore, shut down for 8-inch casing at 1,967 feet; The Texas Co.'s No. 1 Saunders, 6¼-inch casing stuck 7 feet off bottom at 2,510 feet.

Wheeler County—Drilling: Skelly Oil Co.'s No. 1 Davis, drilling without any oil showing at 4,130 feet; Tyrell and others' No. 1 Sheldon, drilling in black rock at 1,805 feet.

PRODUCTION REPORT

Week Ending March 13, 1924

Burkburnett		
American Refining Co.	190	
Barkley & Meadows	1,645	
Humble Oil & Ref. Co.	565	
Gulf Production Co.	1,485	
Magnolia Petroleum Co.	3,280	
McMahon Oil Co.	445	
Panhandle Refining Co.	410	
Sinclair Oil & Gas Co.	50	
The Texas Co.	665	
Texhoma Oil & Ref. Co.	700	
Miscellaneous	12,525	
Total		21,960
Electra		
Epire Gas & Fuel Co.	1,365	
Humble Oil & Ref. Co.	120	
Griswold Oil Co.	395	
Gulf Production Co.	910	
Magnolia Petroleum Co.	4,555	
McMahon Oil Co.	205	
The Texas Co.	4,675	
Texhoma Oil & Ref. Co.	2,150	
Miscellaneous	5,010	
Total		19,385
Iowa Park, Etc.		
American Refining Co.	30	
Griswold Oil Co.	45	
Gulf Production Co.	45	
Panhandle Refining Co.	85	
Texhoma Oil & Ref. Co.	145	
Miscellaneous	2,380	
Archer County—		
American Refining Co.	160	
Empire Gas & Fuel Co.	375	
Griswold Oil Co.	1,950	
Gulf Production Co.	250	
Humble Oil & Ref. Co.	70	
Panhandle Oil & Ref. Co.	160	
The Texas Co.	1,015	
Texhoma Oil & Ref. Co.	3,875	
Miscellaneous	18,435	
Petrolia—		
Gulf Production Co.	55	
Magnolia Petroleum Co.	55	
The Texas Co.	85	
Miscellaneous	105	
Total		29,320
Stephens County—		
Empire Gas & Fuel Co.	125	
Gulf Production Co.	1,770	
Humble Oil & Ref. Co.	1,665	
Magnolia Petroleum Co.	745	
Mid-Kansas Oil & Gas Co.	2,010	
Prairie Oil & Gas Co.	1,035	
Sinclair Oil Co.	305	
The Sun Co.	855	
The Texas Co.	2,390	
T. & P. Coal & Oil Co.	1,450	
Miscellaneous	7,575	
Total		19,925
Eastland County		
Gulf Production Co.	535	
Humble Oil & Ref. Co.	140	
Magnolia Petroleum Co.	565	
Panhandle Refining Co.	860	
Prairie Oil & Gas Co.	820	
Sinclair Oil Co.	635	
The Texas Co.	230	
T. & P. Coal & Oil Co.	940	
Miscellaneous	3,075	
Total		7,800
Other Fields		
Strawn—		
T. & P. Coal & Oil Co.	295	
Miscellaneous	545	
Moran—		
Empire Gas & Fuel Co.	120	
Humble Oil & Ref. Co.	685	
The Texas Co.	185	
Texhoma Oil & Ref. Co.	185	
Miscellaneous	2,575	
Coleman County—		
Miscellaneous	140	
Brown County—		
Miscellaneous	350	
Comanche-Eastland—		
Humble Oil & Ref. Co.	335	
Magnolia Petroleum Co.	1,095	
Prairie Oil & Gas Co.	260	
Sinclair Oil & Gas Co.	75	
The Texas Co.	305	
T. & P. Coal & Oil Co.	240	
Miscellaneous	5,745	
Young County—		
Gulf Production Co.	105	
Sinclair Oil & Gas Co.	530	
Panhandle Refining Co.	330	
The Texas Co.	160	
Miscellaneous	3,320	
Mitchell County	670	
Reagan County	150	
Jack County	95	
Total		18,394
Total all fields		116,776
Total last week		111,408
Gain		5,368

GULF COAST

(Continued from Page 48)

Newton and Gilcrest's No. 5 Wright is shut down.

In the Humble Pool, The Texas, Galena-Signal and Southern Petroleum Co.'s are all working over old wells and reviving them. At Pierce Junction, the Sun Oil Co.'s No. 1 Ritter on the north side of the dome, is below 4,300 feet.

Other Pools

At Spindletop, the Rycade Petroleum Corp.'s No. 2 McFadden, off the dome, is drilling at 3,020 feet. In the pool, the Unity Oil Co.'s No. 82 McFadden is below 780 feet. Wells and others' No. 1 Crawford is below 980 feet.

In the Blue Ridge Pool, across the line in Fort Bend County, the Gulf Production Co. set 6⅝-inch casing in No. 8-C Blakely around 2,500 feet. The Texas Co. set 6⅝-inch in No. 11 Robinson at 3,600 feet and the Mutual Oil Co.'s No. 1 Weems is around 4,600 feet. Mills Bennett is working over an old hole at Barber Hill in Chambers County.

In the Markham Pool in Matagorda County, the Rycade Petroleum Corp.'s No. 2 Hudson is below 3,345 feet and same company's No. 1 Gray is at 2,435 feet. At Big Creek in Fort Bend County, the Gulf Production and Snowden and McSweeney's No. 12 Davis is drilling below 1,980 feet. No. 13 has started and is around 300 feet. A location has been made for No. 7 Wheat.

Brazoria County Pools

In the West Columbia Pool, The Texas Co.'s No. 13 Hogg will make a pumper after working over at 3,240 feet. The Humble Oil & Refining Co.'s No. 23 Japhet is sidetracking to deepen at 1,400 feet. Its No. 2 Badge is below 2,635 feet with No. 2 T. L. Smith rigging.

The Sinclair Oil & Gas Co. is working over old wells at Damon Mound. The Sinclair Pipe Line Co. is running royalty oil from both West Columbia and Damon Mound pools on which it is paying a premium of 25 cents per bbl. over the posted price. This royalty oil comes from leases operated by The Texas Co., Gulf Production, Humble and Sun Oil Co.'s and averaged 2,250 bbls. per day during the first half of last month. Stocks of crude at West Columbia aggregate 1,261,700 bbls. in steel and 1,476,900 bbls. in earthen reservoirs. Approximately 50 per cent of the latter is basic sediment. The stocks belong to The Texas Co. and its pipe line affiliation.

South Louisiana

In the Vinton Pool in Calcasieu Parish, the Gulf Refining Co.'s No. 10 Vincent is a pumper at 2,125 feet, after being drilled deeper. The Texas Co.'s No. 16 C. Vincent is bailing at 2,290 feet after doing the same. Marrs McLean is bailing his No. 5 Gray at 3,150 feet.

The Vinton Petroleum Co.'s No. 1 Gray is deepening at 1,835 feet and No. 45 Gray is drilling below 1,175 feet. The Seiss Syndicate's No. 8 Green is at 2,360 feet. The Edgerly Petroleum Co.'s No. 2 Vincent is around 2,450 feet. The Sun Oil Co.'s No. 2 Johnson is drilling at 2,707 feet. The Texas Co.'s No. 26 Gray is drilling at 1,675 feet. The Gulf

Refining Co.'s No. 59 G. N. G. is drilling at 2,190 feet. No. 31 on the same lease is drilling deeper at 2,345 feet. A location has been made for No. 31 Star. Wilson & Bronch No. 3 Parks is drilling at 2,245 feet. The Just Oil & Refining Co.'s No. 2 Lyons is shut down waiting for casing.

In the Edgerly Pool, A. L. Gibson's No. 2 Landry is drilling below 2,575 feet. The Gulf Refining Co. is rigging up No. 7 Bright-Penn to drill it deeper.

In the Jennings Pool, the Rycade Petroleu Corp.'s No. 2 Latrielle is drilling below 2,790 feet. The Texas Co. is setting strainer in No. 19 Latrielle at 1,830 feet to test. The Crowley Oil & Fuel Co. set 6⅝-inch casing in No. 87 Fee at 1,850 feet.

Rockdale-Minerva

In the shallow sand section of Milam County, Texas, the Owens Refining Co. posted $2.25 for 39 and above gravity. Below is posted at $2. The Fogel Oil Co. purchased the holdings of the Oklahoma-Bell Oil Co., consisting of 176 acres and five wells, making 9 bbls. The consideration is said to have been $15,000. The Fogel Oil Co. has five producers on the Moore lease. The Freddie Palmer Oil Co.'s No. 4 Sterlsky is reported showing gas. The Roark Oil Co. has locations for eight tests on the Roark lease, north of Rockdale.

The Union Sulphur Co.'s No. 1 on the Piedras Pintas Dome in Duval County, is reported pumping 50 bbls. of oil at 335 feet. The Sun Oil Co. set 6⅝-inch casing in No. 4 Cade at High Island, a semi-pool in Galveston County, at 2,222 feet. Its No. 6 Cade is drilling at 2,553 feet.

At Stratton Ridge, another semi-pool in Brazoria County, the Gulf Royalty Co. is setting strainer in No. 1 Boggs at 4,385 feet. It made a few heads last week and then sanded. The Republic and Vacuum Co.s are rigging No. 1 Perry on the south side of the dome. The Associated Oil Co. has a location for No. 1 Perry at Chub Lake and the Humble Oil & Refining Co. one near Perry's Landing. The Texas Co.'s No. 1 Danbury in the same county is below 2,835 feet.

The Cardinal Oil Co.'s No. 1 in Bastrop County is drilling below 1,350 feet. Kunz and others are resuming work on the shut down test near Willis, Montgomery County.

Laredo District

The runs of the Magnolia Petroleum Co. from the districts in Webb County total 43,808.22 bbls. for the month of February, or better than 1,500 bbls. per day. Completions include the Rio Grande Oil Co.'s No. 7, rated at 100 bbls., the Carnahan Producing & Refining Co.'s No. 57 good for 100 bbls. initial and Clark and Howard's No. 1, making 80 bbls. The Caroline-Texas Co. is starting No. 6 Barnsley Ranch on which it developed five gas wells. The Laurel Oil Co. has started No. 3 Garcia. The A. J. D. Syndicate's No. 1 Pratt, near Enclinal, is drilling deeper below 3,250 feet.

In the Callihan district in McMullen County, the San Balt Oil Co.'s No. 3 is rated at 100 bbls. initial. No. 4 is rigging. Hoard and Schubeaur report No. 3 Fisher in an oil sand at 732 feet. It is north of the big blowout and 2 miles north of Three Rivers. Casing has been set in the Cisco Pipe Line Co.'s No. 1 Dullihan and the Grubstake Investment Co.'s No. 5 Lark. It is rigging No. 3 Nichols. The Coyle-Concord Co. has a derrick up in the Frio River on State land. The Allen Oil Co.'s No. 2 Stitz is drilling below 500 feet. Seifert and Adams have started No. 1 Mahoney, between Callihan and Three Rivers. The Three Rivers Oil Co.'s No. 1 Lake is below 300 feet. Lightfoot and Son's No. 1 is rigging.

Luling Field

The runs of the Magnolia Petroleum Co. from the Luling Field during the month of February aggregated 274,115.49 bbls., or better than 9,450 bbls. per day. The Grayburg Oil Co.'s No. 8 Tabor in the northeast section of the old field is making 500 bbls. Four deep tests searching for a lower sand than the present pay around 2,150 feet, are now drilling in the original district and one over in Guadalupe County to the southwest. The Grayburg Oil Co.'s No. 1 Black, 2½ miles from production, is drilling below 4,100 feet. The United North and South Oil Co. is deepening No. 7 Tabor, No. 6 C. Byrd and No. 5 Rios, all in the original part of the field. Over in Guadalupe County, the same company's No. 1 Shanklin is drilling below 3,500 feet. It is south and east from new wells there, which are 3 miles southwest from the old production. A water sand was found in this test at 2,100 feet, or at about where the pay is found in the producers. The United North and South Oil Co.'s No. 2 Allen is drilling in in the extension district, as is the Gulf Royalty Co.'s No. 1 Allen. The Texas Co. has entered the field, taking 20 acres out of the Allen, northeast from the producers The Gulf Royalty Co.'s test is about 1,800 feet north from production. Twenty-two rigs are running in the Guadalupe County extension of the Luling Field, most of these being offsets on McKean, Allen, Lopez and other close in acreage.

The Rycade Petroleum Co. is rigging No. 1 Meihofer, southwest of Seguin, Guadalupe County. The Magnolia Petroleum Co. is drilling No. 1 Schubert and J. K. Hughes Co. No. 1 Allen.

In the old Luling Field in Caldwell County, the United North and South Oil Co. is drilling Nos. 11, 12 and 13 Tabor, No. 4 Gideon, No. 6 Proctor and No. 3 L. Byrd.

In Bexar County, the Gas Ridge Development Co. has started No. 3 Hirschfield. In the Atascosa County end of the Somerset Field, the Grayburg Oil Co. is drilling No. 13 Shaw and H. L. Hamilton No. 8 Hughes. E. B. Reynolds and associates of San Antonio, are starting a 3,000-foot test on the Butler land in the southern part of Karnes County, 4½ miles west of Runge.

A. H. Smith has a location for No. 2 Schallbert on the Palangana Dome in Duval County. The Witherspoon Oil Co. is rigging No. 1 Nagy and Witherspoon in La Salle County. C. G. Chandler is drilling No. 2 Pehba in Webb County.

N. LOUISIANA-ARKANSAS

(Continued from Page 40)

is bailing at 2,020 feet in No. 5 Linglebach, Section 22-16-15.

The Steele Oil Co. set 15½-inch casing at 18 feet in No. 2 Hodges, Section 12-16-17; Stewart and others set 6-inch at 2,013 feet in No. 1 T. C. Goodwin, Section 21-16-15, and Stock and others are drilling at 1,750 feet in No. 1 Tufts, Section 7-17-14.

The Sun Oil Co. is drilling at 1,150 feet in No. 1 Wilson, Section 19-16-15, and has derrick up for No. 1 Smith in Section 1-16-17.

Sutherland and others set 10-inch casing at 80 feet in No. 1 Ballard, Section 21-16-15.

Rigging Up to Drill

The Texas Oil Co. is rigging up to drill No. 1 Flenniken, Section 17-16-15.

The Unity Oil Co. is rigging up to drill No. 1 Alphin in Section 24-16-16.

Tarver and others are drilling at 2,000 feet in No. 1 Sample, Section 36-19-13, 15 miles southeast of the southern extremity of the El Dorado Field.

E. T. Teter, trustee, is rigging up to drill No. 1 Burnside in Section 33-17-13, 5 miles east of production, in El Dorado East Field.

The Traffic Oil Co. is drilling at 1,850 feet in No. 1 Goodwin, Section 20-16-14, on the eastern edge of the Norphlet district.

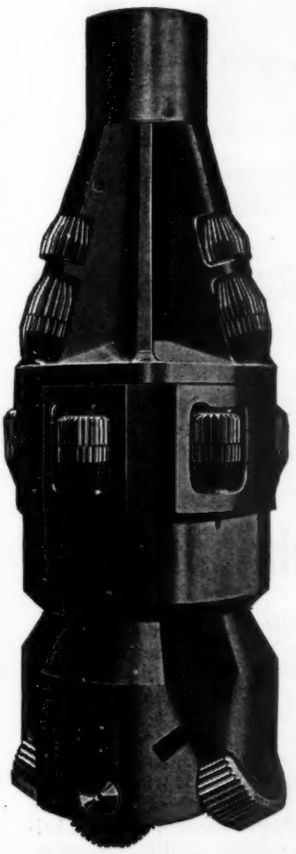
Stock and others are drilling at 1,750 feet in No. 1 Tufts, Section 7-17-14, in the El Dorado East Field, and the Vag Oil Co. is down 2,140 feet in No. 1 Lyon in the same section.

The Vecino Syndicate set 10-inch casing at 163 feet in No. 1 Burton, Section 25-16-16.

A summary of Ouachita County oper-

SAFETY In Rock Drilling

—a matter of using efficient equipment



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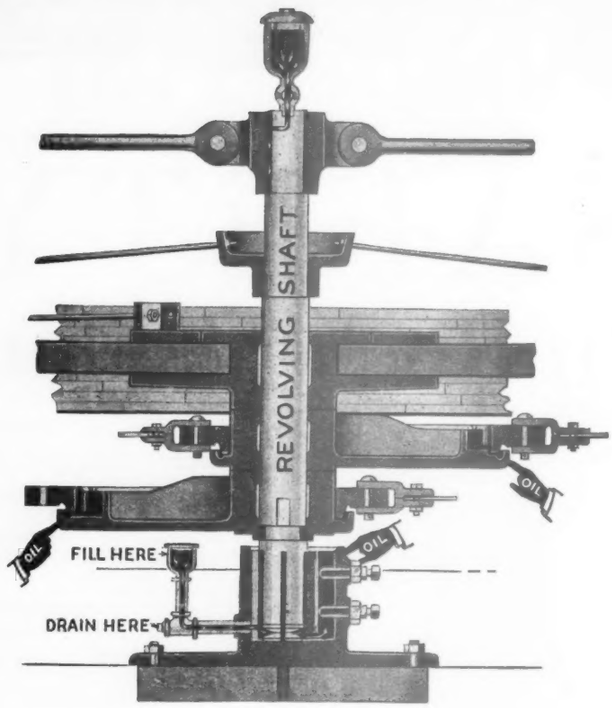

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H. G. Durnell

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There are but FOUR points to lubricate on the Durnell Underpull Bandwheel Pumping Powers and the REVOLVING Shaft greatly simplifies this operation. The top bearing is lubricated by a large sight feed oil cup; the lower bearing is enclosed in the base which acts as an oil reservoir and is filled with oil by means of a pipe, thus the entire lower bearing runs in a bath of oil continuously. The two eccentric rings are the other points requiring lubrication and oil cups or pockets are cast in the eccentrics, these cups hold sufficient oil to lubricate the eccentrics for twenty-four hours continuous operation. Complete lubrication, such as described here, is insurance for continuous operation.

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BARTLESVILLE, OKLA.

ations the past week shows a slight increase, most of the new drilling being old wells drilling deeper. There were 14 wells waiting on standard rig to pump; 13 temporarily abandoned; 77 drilling; 8 rigs; 37 derricks and 8 locations.

The Amerada Petroleum Corp. is down 2,275 feet in No. 1 Lester Mill Co., Section 9-13-19. Burton, trustee, is sidetracking liner at 2,100 feet in No. 1 Hughes, formerly completed estimated making 10,000 bbls. at 2,010 feet, Section 28-15-16.

Dr. Clark and others set 10-inch casing at 40 feet in No. 4 Berry, Section 24-15-17. The El Dorado Union Oil Co. set 10-inch casing and drilled to 1,400 feet in No. 5 Hughes, Section 28-15-16, and has derrick pattern up for No. 6 Shirey, Section 30-15-16.

The Forest Oil Co.'s No. 3 Minor has sanded up at 2,284 feet, Section 29-15-16. Galloway and other are waiting on standard rig to pump No. 3 Hughes at 2,250 feet, stands full of oil, Section 28-15-16.

The Atlantic Oil Producing Co. is arranging to test No. A-2 Wells at 2,321 feet in Section 25-15-17; set 10-inch casing at 95 feet in No. A-3, and has derrick up for No. A-4 and No. B-1. It is down 1,500 feet in No. B-1 Brierton, Section 25-15-17.

The Gilliland Oil Co. set 6-inch casing at 2,215 feet in No. S-1 Wells, Section 25-15-17; set 6-inch casing at 1,862 feet in No. 3 Myar fee, Section 30-15-16; waiting on standard rig to pump No. A-1 McRae, standing 1,800 feet in oil, at 2,275 feet, Section 30-15-16, and set 10-inch casing and drilled to 1,280 feet in No. B-4 Myar, same section. It set 10-inch casing in Nos. 1 and 2 Kyle; rig up for No. 3; location made for No. 4; derrick pattern on location for No. 5 and location made for No. 6, all in Section 29-15-16. In Section 30-15-16, it has derrick up for No. 3 Solmson and set 10-inch casing and drilled to 1,530 feet in No. 4, formerly reported No. 3, same section.

The Gu'f Refining Co. set 6-inch casing at 2,240 feet in No. 6 Harris, Section 30-15-16; and has derrick pattern up for No. 7. It set 4½-inch casing at 2,250 feet in No. 1 Bennett, Section 32-15-15; has rig up for No. 4 Meek, Section 19-15-16; set 6-inch casing and drilled to 2,255 feet in No. A-2 W. F. Patton, Section 31-15-16; its No. 4 Solmson flowed 100 bbls. and stopped, 14 feet of broken sand at 2,291 feet, and it is making arrangements to drill deeper, Section 29-15-16.

Gulf Co.'s Operations

The Gulf Refining Co. set 10-inch casing and drilled to 1,120 feet in No. 5 Solmson, Section 29-15-16; drilled to 1,770 feet in No. 3 Meakin, Section 29-15-16, and to 1,370 feet in No. 4. It set 10-inch casing at 290 feet in No. A-3 Werner, Section 36-15-17; waiting on standard rig to pump No. 14 Werner at 2,260 feet, Section 32-15-16, and is bailing No. A-5 Umpstead at 1,885 feet, Section 33-15-15, with derrick pattern on location for No. A-6.

L. K. Hamilton is down 1,300 feet in No. 1 Smith, Section 36-15-17. Holloway & Ellis set 10-inch casing and drilled to 1,370 feet in No. 2 Shirley-Berg, Section 29-15-16. The Home Refining Co. bailed No. 1 Anderson dry, pulling liner to reset and test at 24 feet of broken sand at 2,325 feet, gumbo and shale to 2,375 feet, Section 26-15-17.

The Houston Oil Co. is arranging to test No. 2 Patton in 12 feet of sand at 2,250 feet, Section 31-15-16, and has derrick up for No. 4. The Humble Oil & Refining Co. set 6-inch casing at 1,927 feet in No. 2 Ferris, Section 34-15-15. Harley and associates are waiting on standard rig to pump No. 1 Stringfellow at 2,298 feet with 600 feet of oil in the hole and have derrick up for No. 2, Section 28-15-16.

Dr. Johnson is waiting on standard rig to pump No. 1 Solmson at 2,279 feet with 1,000 feet of oil in the hole, Section 29-15-16. Ernest Johnson has rig up for No. 2 Hughes, Section 21-15-16. Keen & Woolf are arranging to pump No. 6 Solmson at 2,250 feet, Section 32-15-16. Knox and others set 6-inch casing at 2,270 feet in No. 2 Shirley-Berg, Section 29-15-16.

Leon and associates are waiting on standard rig to pump No. 1 Patton at 2,246 feet and have derrick up for No. 2, Section 32-15-16. The Magnolia Petroleum Co. set 6⅝-inch casing at 2,[illegible] feet in No. B-5 Smith, Section 31-15-[illegible]. The Mangus Oil Co. set 6-inch casing at 2,225 feet in No. 2 fee, Section 24-[illegible]-17. The Marr Oil Corp. set 10-inch casing at 60 feet in No. 1 Patton, Section 31-15-16.

The Mid-Continent Petroleum Co. is setting 6-inch casing at 2,245 feet in No. 3 Shirley-Berg, Section 29-15-16. Murphy, trustee, tested 3,000,000 feet of gas and 2,000 bbls. of salt water at 1,[illegible] feet with a showing of oil in No. [illegible] Snyder, Section 34-15-15. The Lone Smackover Oil Co. set 6-inch casing at 2,200 feet in No. 4 Mangus, Section 24-15-17.

The Phillips Petroleum Co. has derrick up for No. 4 Hearnsberger Section 33-15-15. J. D. Reynolds has a fishing job at 2,070 feet in No. 1 C. E. Crane, Section 22-15-16. The Roxana Petroleum Corp. is bailing to test No. 1 Snyder at 1,965 feet, Section 34-15-15. Bell & Simmons set 10-inch casing at 71 feet and has now shut down No. 2 Shirley-Berg waiting boiler at 1,600 feet, Section 29-15-16.

The Smith Refining Co. has derrick up for No. 6 fee, Section 30-15-16. It plugged back No. 5 Patton to 2,253 feet from 2,263 feet to cut salt water and is now bailing to test, Section 31-15-16. It set 6-inch casing at 1,850 feet in No. 6 and has derrick up for No. B-1, same section.

Snowden & McSweeney set 6-inch casing at 2,250 feet in No. 4 Taylor and have rig up for No. 6, Section 29-15-16. The Standard Oil Co. is down 2,200 feet in No. 2 Minor, Section 21-15-16; set 6-inch casing at 1,900 feet in No. 2 Griffin, Section 33-15-15; swabbed down to liner and has a little showing of oil and gas at 1,972 feet in No. 12 Umpstead, Section 32-15-15. It is drilling at 2,070 feet in No. 2 B. Goodwin, Section 5-16-15.

Sun Oil Co.'s Work

The Sun Oil Co. is drilling at 1,127 feet in No. 1 Newberry, Section 24-15-17. Sutton and others set 6-inch casing at 2,230 feet in No. 5 Hughes and set 10-inch at 60 feet in No. 6, Section 28-15-16. Staples and others are setting 2-inch tubing at 2,297 feet, 1,000 feet of oil in hole, in No. 3 Smith, Section 36-15-17.

The Sure Oil Co. is drilling at 1,[illegible] feet in No. 4 fee, Section 30-15-16. The Tennessee Oil & Gas Co. tested salt water at 2,342 feet in No. 1 Turbeville and is arranging to abandon the well, Section 17-15-16. Stumph & Todd have rig up for No. 1 fee; location made for No. 2 and derrick up for No. 3, Section 30-15-16. The Texas Co. set 6⅝-inch casing at 2,240 feet in No. B-2 L. L. Chandler; drilling at 900 feet in No. B-3; 40 feet in No. B-4 and has rig up for No. B-5, Section 30-15-16. It is waiting on standard rig to pump No. A-4 Solmson at 2,300 feet with 1,000 feet of oil in the hole, Section 29-15-16; arranging to test No. A-7 at 2,275 feet and set 6-inch casing at 2,225 feet in No. A-4, Section 29-15-16. It is arranging to test No. 2 Smith at 2,250 feet, Section 36-15-16.

Trammel and others have a fishing job at 590 feet in No. 1 Shirey-Berg, Section 29-15-16. Whitteken and others have gone back into No. 1 Hardin, formerly completed estimated making 1,000 bbls. at 2,047 feet, and are making arrangements to deepen, Section 28-15-16. Wingfield and others are drilling at 2,100 feet in No. 1 Smith, Section 36-15-17.

The Woodley Petroleum Co. is drilling at 1,200 feet in No. 2 Umpstead, Section 4-16-15. The Wonder State Oil Co. has derrick pattern on location for No. 1 Anderson, Section 29-17-15.

Columbia County Area: The Amerada Petroleum Corp. has made location for a well on the Baker-Joiner lease, Section 2-18-22. The Arkansas Invincible Oil Corp. is drilling at 1,740 feet in No. 1 Taylor, Section 12-15-20.

The Atlantic Oil Production Co. is drilling at 50 feet in No. 1 Murphy, Section 14-15-20. The Magnolia Petroleum Co. is waiting on standard rig to pump No. 4 Wepfer at 2,110 feet, Section 26-15-20, and is rigging up to drill No. 5 Hammond, Section 25-15-20. Russell & Kent are rigging up No. 1 Emerson, Section 7-19-19. The Standard Oil Co. has rig up for No. C-1 Loney Jones, Section 25-15-20.

Ouachita County Area: The Ohio Oil Co. has derrick up for its third well on the Hall lease, in Section 31-15-19.

Bellevue Field

The Humble Oil & Refining Co. is waiting on Standard rig to pump No. A-10 Bliss & Weatherbee, Section 15-19-11. R. O. Roy is waiting on standard rigs to pump Nos. 32 and 33 Scanland, Section 15-19-11. The Standard Oil Co. is waiting on standard rig to pump No. 12 Bliss & Weatherbee at 435 feet, Section 10-19-11, and has derrick up for No. 7 Louisiana fee, Section 11-19-11. The Sun Oil Co. is drilling at 150 feet in No. 2 Ford-Vance, Section 16-19.11-

Claiborne Parish

The Block Oil Co. is arranging to test broken sandy shale and gray sand from 1,409 to 1,436 feet in No. 1 Aubrey, Section 20 21-8. The El Dorado Chief Oil Co. is drilling at 885 feet in No. 1 Gandy, Section 36-22-7. The Ohio Oil Co. is bailing 6-inch casing at 2,755 feet in No. 1 Traylor, Section 13-23-8 and waiting on Standard rig to pump No. 1 Whaley at 2,798 feet, Section 9-23-8. The Standard Oil Co. is waiting on standard rig to pump No. 8 Guy Oakes, Section 29-21-7. The Triangle Drilling Co. has shut down No. 1 Rainach at 2,798 feet, Section 17-22-5.

De Soto Parish

Ulrey and associates are drilling lime at 2,700 feet in No. 1 Frost Johnson, Section 3-11-15, 7 miles east of Logansport.

Red River Parish

The Fortuna Oil Co. is drilling at 2,940 feet in No. 16 Armistead, Section 24-12-11.

Caddo Parish

The Alabama Petroleum Co. has shut down No. 1 Barlow at 3,752 feet, Section 5-21-15. Brewer & Sewall are waiting on new rotary at 2,750 feet for No. 1 Sharp, Section 15-18-16. The Caddo Western Oil Co. has shut down No. 1 Gardner & Blades at 2,600 feet, Section 2-16-15. Collins and associates are rigging up to drill No. 1 Levy Realty Planting Co., Section 23-19-14.

The Fortuna Oil Co. set 8-inch casing at 1,280 feet in No. 11 Doan-Thigpen, Section 6-20-15. The Gulf Refining Co. set 10-inch casing at 180 feet in No. 215 Ferry Lake, Section 15-20-16.

The Louisiana Petroleum Co., Inc., tested No. 1 Brewer dry and is arranging to abandon the well at 2,952 feet, Section 33-23-16. Rush and others are bailing No. 1 Ruderdorf to test chalk rock at 1,625 feet in Section 11-20-16. Tarver and others set 6-inch casing at 1,400 feet in No. 5 Huckaby, Section 14-21-15 in the Pine Island district.

Arkansas Wildcats

Grant County: The Texas Co. is drilling rock at 2,775 feet in No. 1 Chicago Land & Timber Co., Section 14-6s-13w.

Hempstead County: The Columbus Hope Oil Co. caught bailer and 5⅛-inch casing seat is leaking in No. 2 King. They are lining casing to reset at 2,130 feet, Section 24-11-25, total depth 2,145 feet.

Myers and associates have a fishing job in No. 1 Nichols, Section 17-11-25. G. W. Simmons, trustee, tested No. 1 Adams dry at 2,214 feet and is drilling at 2,216 feet, Section 36-12-27.

Little River County: Gaines and associates are drilling at 2,400 feet in No. 1 Goodwin Timber Co., Section 15-13-29. Grote and others are drilling at 2,645 feet in No. 1 Allen, Section 2-14-31, a well which has been shut down at 2,360 feet for several months.

Miller County: Kingley and associates have resumed drilling in No. 1 Thompson which has been shut down for several weeks and are down 715 feet, Section 33-14-28.

Nevada County: Burnham and others shut down No. 1 C. D. Perry at 1,292 feet, Section 12-15-22. Dee and associates shut down No. 1 Johnson at 1,340 feet, Section 27-14-21. Dudley and associates set 10-inch casing and drilled to 2210 feet in No. 1 Grayson, Section 32-11-21.

The Keystone Oil Co. set 10-inch casing at 40 feet in No. 5 Waters, Section 11-14-21. Smitherman & McDonald set 10-inch casing at 40 feet in No. 3 Waters, Section 10-14-21.

Louisiana Wildcats

Bienville Parish: The Arkansas Fuel Oil Co. is drilling at 2,485 feet in No. 1 Harrell, Section 6-18-5, 2 miles north of Arcadia.

Bossier Parish: In the northeast corner of Bossier Parish, the Atlantic Oil Producing Co. is drilling at 50 feet in No. 1 Bodcau Lumber Co., Section 24-23-12, and Estes and others at 100 feet in No. 1 Bodcau Lumber Co., Section 15-23-12.

La Salle Parish: Helm & Burch had a showing of dead oil in their test on the Urania lease in Section 21-11-1e, at 617 feet, and are arranging to drill deeper.

Morehouse Parish: Ladell and others are drilling at 1,050 feet in No. 19 fee, Section 32-20-5, and are rigging up to drill No. 22 in Section 22-20-5. The Oil Field Exploration Co. set 10-inch casing at 200 feet in No. 1 Eldridge, Section 34-20-5e, and the Richland Oil & Gas Co. is temporarily closed down at 2,570 feet in No. 1 Chess Wymond, Section 32-19-6e.

Ouachita Parish: The Atlas Oil Co. is drilling at 3,985 feet on its deep test on the West Virginia Timber Co. lease in Section 3-18-5e, 10 miles northeast of Monroe. Haynes and others are drilling at 2,670 feet in No. 2 Dixie Lumber Co., Section 54-17-3e, 6 miles south of Monroe.

J. M. Huber set 8-inch casing at 950 feet in No. 2 Farmer, Section 4-18-5; Ladel and others are moving in rig for No. 23 feet in Section 8-19-5, and the Palmer Corp. has derrick up for No. 2 Spades in Section 33-19-5, in the Monroe gas district.

The Southern Carbon Co. has five rigs running on fee and Fairbanks leases; the Standard Carbon Co. is drilling at 900 feet in No. 1 Spades, Section 33-19-5, and the West Virginia Land & Timber Co. is drilling at 2,200 feet in No. 3 fee, Section 4-18-5.

Union Parish

Repeated tests in the Gulf Refining Co.'s No. 1 Security Trust Co., in Section 23-23-1w, in the north end of Union Parish, resulted in very slight showings of oil, with hot salt water and a little oil at its present depth, 2,230 feet. Bailing is still in progress, in broken sand and shale.

Love Brothers Drilling Co. set 10-inch casing in their test on the Frost Johnson Lumber Co. lease in Section 1½ miles north of the Palmer & Davidson producing well, and Lide and others are drilling at 1,000 feet in No. 1 Templeton, Section 18-23-1e. In the southwest corner of the parish, south of Bernice, Cargile and others set 10-inch casing in a test on the Heard lease, in Section 25-21-3w, at 120 feet.

Webster Parish: In the Cotton Valley district, the Fortuna Oil Co. is drilling at 2,945 feet in No. 1 Statton, Section 31-22-10. The Humble Oil & Refining Co. set 15½-inch casing at 180 feet in No. 1 Babb, Section 14-21-10. The Ohio Oil Co. is arranging to test at 2,500 feet in No. 2 Hodges, Section 15-21-10. Olmstead and others are rigging up to drill No. 1 Hudson, in Section 17-19-10.

West Carroll Parish: The Arkansas Natural Gas Co. made a location for No. 1 Fiske in Section 8-21-10, and the Orion Oil Co. for No. 1 Bain Wagon Co., Section 23-23-10.

CENTRAL WEST

(Continued from Page 34)

number of important tests made for both Clinton and Trenton formations.

Eastern Kentucky

At no time has development work been

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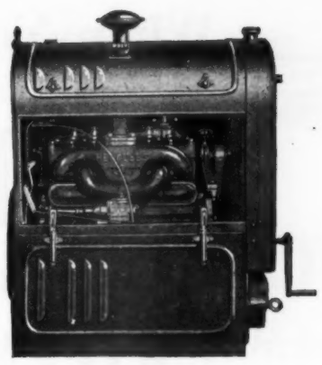

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so depressed. The field, more or less active for three years, has gone backward due to the low price of crude, which has now improved to a great extent, but the bad weather is holding the work back, as it is utterly impossible to move material through the hills of Johnson-Magoffin-Lawrence and other counties, and about all the work done is on properties where there is material to complete wells.

The Union Gas & Oil Co., the largest operating concern in the North Weir Field of Lawrence-Johnson counties, reports but one completion, No. 6 on the J. A. Diles, in the Keaton district, with a production of 12 bbls. No. 3 James Diles, is fishing on top of the sand. No. 4 D. H. Ferguson, No. 30 J. J. Gambill are both due for completion within a few days. Nos. 20, 21 and 22 Proctor Sparks are under way, and several old producers are being cleaned out.

The Indian Refining Co., during February handled a total of 92,850.12 bbls. of oil from the Kentucky fields. The oil came from counties as follows: Lee, Estill and Powell, in the central Kentucky division, 39,516.39 bbls.; in the western Kentucky division, Allen County, 29,319.44 bbls.; Warren County, 17,728,-88 bbls., and Hancock and Ohio counties, 6,285.41 bbls.

KANSAS FIELDS

(Continued from Page 36)

others were drilling their No. 1 Toogood, SE cor. SW, Section 7-26-13, at 300 feet. Jamison and others were going ahead at 3,360 feet with their No. 2 Dixon, CEL SE SW, Section 18-28-9.

R. G. Gillespie was spudding his No. 1 Browning, NE cor. Section 19-22-10. Rodgers and others had a 40-bbl. producer after a shot of 100 quarts in their No. 3 Barnard, C NE NW NE, Section 31-22-10. Sand was shot from 2,428 to 2,472 feet. The Empire Gas & Fuel Co. made a new location for No. 3 Killeson, CWL SW NW, Section 14-22-11, and had a rig in place for a direct west offset to it, CEL SE NE, Section 15-22-11. The Phillips Petroleum Co. had a rig completed for its No. 7 Clark, CWL E half SE, Section 28-22-11, and another for its No. 3 Hilliard, CEL NE SW, Section 33-22-11. The same company's No. 9 Seeley, C NE NW SE, Section 5-23-11, was a 60-bbl. producer after a shot of 60 quarts in sand at 1,620-44 feet.

The Empire Gas & Fuel Co. had a rig up for No. 10 Pratt, CEL NE SW, Section 13-23-10, and was drilling at 2,500 feet in its No. 6 Pratt, SE cor. NW, same section. The Mission Oil Co. & Roth had a rig in place for their No. 53 Thrall, C SE SE, Section 29-23-10, and had timbers for No. 36 Thrall, CSL SE, same section. The Mid-Kansas Oil & Gas Co.'s No. 2 Martindale, CEL NE, Section 31-23-10 topped the sand at 2,282 feet, and found oil at 2,310-40 feet. After a 160-quart shot it was good for 90 bbls. The same company had timbers on the ground for its No. 3 Martindale, CEL SE NE, same section.

Thrall Operations

In Section 32-23-10, the Mission Oil Co. was drilling at 400 feet in its No. 1 Thrall, CNL NW SW; No. 2 Thrall, NW cor. SW NE, was drilling at 2,100 feet; No. 26 Thrall, CNL NW NE, was spudding; No. 32 Thrall, CSL N half N half NE, was drilling at 1,300 feet; No. 33 Thrall, NW cor. SE NW NE, was spudding; No. 34 Thrall, C NE, was a rig; No. 35 Thrall, C SE SE, was rigging up; No. 36 Thrall, CSL SE, had a rig on the ground. The Phillips Petroleum Co.'s No. 3 Lewis, C NW NE NW, Section 32-23-10, was being spudded, and the same company's No. 8 Lewis, CEL SW NW, same section, had timbers on the ground. The same company had a rig and tools in place for No. 2 Doughty, C NW SW NW, Section 4-23-11, and the White Eagle Oil & Refining Co. was rigging up No. 4 Edwards, C NE SW NE, Section 13-23-10. The Empire Gas & Fuel Co.'s No. 2 Thrall, C SW SE SW, Section 29-23-10, was drilling at 350 feet.

In the southwestern corner of Colley County, the Cosden Oil & Gas Co. was spudding its No. 1 Bahr, SW cor. NE, Section 14-23-13, and the Manhattan Oil Co. had a rig on the ground for its No. 1 Elliott, SE cor. SW, same section.

W. KENTUCKY-TENNESSEE

(Continued from Page 50)

been increased by continuous pumping. In the Bear Creek district, 3 wells on the Lela Keen were shut down as they were being hooked to a new power. No. 3 Kerr, at Kettle Creek was shut down to await new power while 2 wells on the Logan, in the same district were being worked over.

Drilling Operations

At Bear Creek, E. M. Treat & Co.'s No. 2 Dickens was spudding; Coffield, Williams and others' No. 1 T. Bow was progressing at 200 feet. A showing was found in the Beaver sand at 170 feet. Wilcox Brothers are moving a rig to drill No. 2 Sarah Sheckles to offset the Dickens of Treat & Co.; Bob Wise's No. 1 Ferris is a rig.

Sulphur Creek—W. S. Raydure's No. 2 Mrs. Coop was progressing at 600 feet; the Kanawha Oil Co.'s No. 2 G. Williams, was making hole at 1,050 feet. Douglass St. Clair's No. 1 Victoria King is drilling a few feet below the Pencil Cave found at 850 feet; Combest Oil Corp.'s No. 1 Groce was shut down in the second Sunnybrook; its No. 4 A. Huddleston was rigging up; Morris Petroleum Co.'s No. 7 A. Huddleston is being rigged up.

In the Kettle Creek district, W. S. Raydure's No. 1 Wash Huddleston was drilling at 650 feet; Louisville Gas & Electric Co.'s No. 1 Speer was shut down. A large volume of gas was struck in the shallow pay which ignited and damaged the rig. The discovery well on the Kerr farm is being drilled deeper. Lynch & Co.'s No. 1 Barksdale was shut down; W. S. Raydure's No. 1 Sam Smith, shut down; E. N. Ahlfeldt & Co.'s No. 3 Turn Smith, shut down; Daniel Boone Oil Co.'s No. 4 Logan, is being rigged up. No reports were available on Nos. 1 and 2 Turn Smith and No. 1 Logan being drilled by Bunta and associates.

The Anderson well, of the Combest Oil Corp., at Galloway Creek was shut down at 750 feet. Pencil Cave was encountered at 495 feet. Orders were to drill this test to 1,500 feet. In the vicinity of Burkesville, Wilcox Brothers' No. 1 Simpson was shut down.

At Judio Creek, the Judio Development Co.'s No. 4 J. B. Hume is still being rigged up. On the adjoining B. Goff tract, the Hardly Able Oil Co. was spudding No. 1 B. Goff, at 100 feet.

Three wells on the J. B. Hume farm of McCormick and others, in the Judio district are making 60 bbls. daily. On March 5, Upper and associates purchased 700 bbls. of crude from the owners of the Hume lease and it was loaded and barged down the Cumberland River to Nashville. The Paragon Development Co. is now laying a line to the Hume production, a distance of about 4 miles from other lines. It is the opinion of many that the completion of this line will bring about the drilling of a number of tests as the Hume wells are holding their flush in good shape and make this district quite attractive.

ENGINEERS TO MEET IN TULSA

The Oklahoma division of the American Association of Engineers will hold its first annual convention in Tulsa on March 21 and 22, on the fourth floor of the City Hall. Papers relating to the petroleum industry will be read at the Saturday morning meeting by D. B. Buchanan, vice president of the Cheetham & Smith Corp., and James H. Gardner, president of the Gardner Petroleum Co.

Late News From the Fields

OKLAHOMA

In the Osage, K. L. Wickett's No. 3, CEL SE SE SW, Section 34-27-12, was good for 20 bbls. natural from sand at 1,287-1,305 feet.

In Tulsa County, O. N. West and others made a 20-bbl. producer out of their No. 2 Pratt, CNL NE SW, Section 32-18-13, by shooting it with 60 quarts in sand at 965-91 feet. Murphy & Spears had a 10-bbl. well in their No. 3 Parks, CWL NW NE SW, Section 13-18-12, after a 20-quart shot in sand at 732-41 feet. The Riverside Oil Co. was spudding its No. 1 Self, CSL SE NE NE, Section 2-16-12.

In Okmulgee County, the Pulaski Oil Co. shot its No. 2 Willis, NW cor. SE SW, Section 22-16-12, with 20 quarts in sand at 2,538-44 feet and it was good for 850 bbls. The Sheridan Oil Co.'s No. 6 Willis, NE cor. SW SW, Section 22-16-12, was a 450-bbl. well after a 20-quart shot in sand at 2,537-49 feet. Clover and others were drilling at 300 feet in their No. 1 Grant, SE cor. SW NW, Section 3-15-11, and Wolford & Webster were spudding their No. 1, SE cor. NW SW, same section. The Labenne Oil Co.'s No. 2 Hill, CSL NW SE, Section 22-15-11, was dry and abandoned at 2,452 feet. The same company's No. 1, NE cor. NW SW, Section 23-15-11, was good for 5 bbls. natural from sand at 1,784-95 feet. John Botts shot his No. 3 Hawkins, SE cor. SW SE, Section 32-15-11, with 40 quarts in sand at 2,506-22 feet and it produced 30 bbls.

There were five dry holes and one small producer in Townships 15-13 and 15-14. The dusters included A. W. Cline's No. 1 Wilson, NE cor. NW, Section 14-15-13, at 2,467 feet; W. R. Summerville's No. 1, C SE NE, Section 2-15-14, at 1,760 feet; the same company's No. 2, SW cor. NE NE, same section, at 2,195 feet; Vensell & Elliott's No. 7 Harrison, SW cor. NE SW, Section 18-15-14, at 1,826 feet; J. E. Hennesy's No. 4 Rowe, C SW, Section 8-15-14, at 1,760 feet. The producer was the M. Carr Co.'s No. 36 Grayson, C SE NE, Section 34-15-14, which made 10 bbls. after a 40-quart shot in sand at 2,115-32 feet. In Muskogee County, Cook & George had a failure in their No. 3 Hawkins, CWL NW NW NW, Section 5-15-15, and the Gilliland Oil Co. also abandoned a duster at 1,360 feet in No. 4 Jefferson, CEL NE NE NE, Section 6-15-15. In Wagoner County, Corry and others abandoned their No. Harrison, SE cor. NW NW, Section 15-15-16, as dry at 1,852 feet.

Southeast of Okemah in Okfuskee County, a duster was abandoned by C. H. Lebow at 3,250 feet in his No. 2 Sevier, CSL NE SW SW, Section 6-10-10. The Skelly Oil Co. was drilling at 1,050 feet in its No. 1 Wind, NW cor. SE, Section 1-10-9. W. L. Umburn recorded a failure in his No. 1, NE cor. NW, Section 3-10-11, at 3,334 feet.

In the Wewoka Field, a well flowing 500 bbls. was brought in by the Prairie Oil & Gas Co. in its No. 1 D. B. Scott, C NE SW SW, Section 33-8-8, from sand at 3,176 feet. The Prairie was building at 3,175 feet. The Prairie was building a rig for its No. 2 Scott, C SE SW SW, same section. The Magnolia Petroleum Co.'s No. 3 Parker, C SW SE NW, same section, was making 40 bbls. daily from sand at 3,198-3,219 feet. The oil was badly cut. The same company was drilling at 175 feet in its No. 4 Parker, C NE SE NW, same section. Lewis & Clark were spudding their No. 2 Long, C SW SE SW, Section 33-8-8. The Dixie Oil Co. was drilling at 1,300 feet in its No. 1 Walker, C SE NE SE, Section 29-8-8, and was spudding its No. 1 Sams, C SW SW NW, Section 28-8-8.

In the North Fox area of Carter County, the Humble Oil & Refining Co. abandoned its No. 1 Lyles, C NE SE SE, Section 34-1s-3w, as dry at 3,423 feet. The same company was rigging up a rotary for No. 1 Dexter, C NE NW SE, Section 28-1s-3w, and was drilling at 650 feet in its No. 1 Lusk, C NE NE NE, Section 33-1s-3w. Grooms and others were rigging up tools for No. 1 Morris, C SW NW NE, Section 19-1s-2w, and the Humble had a duster at 1,788 feet in its No. 2 Carpenter, C SW SE SE, Section 22-2s-3w. The Magnolia Petroleum Co.'s No. 1 Nelson, C NW NW NW, Section 25-2s-3w, was making 300 bbls. from broken sands at 2,147-2,205 feet. The same company's No. 5 Tucker, C SW NE SE, same section, was good for 500 bbls. from sand at 2,682-92 feet and was cleaning out. N. L. Amster had 8,000,000 feet of gas in his No. 3 Duncan, CSL SE SE NE, same section, from sand at 2,575-95 feet. The Atlantic Oil Producing Co. had a 330-bbl. producer in its No. 1 Phillips, C SW NW NW, Section 25-2s-3w, from sands at 2,193-2,207, 2,494-2,510 and 2,520-52 feet. The Magnolia Petroleum Co.'s No. 1 Arrington, C SW SE SW, Section 32-2s-3w, was dry and abandoned at 3,485 feet.

In the Burbank, the Gypsy Oil Co.'s No. 2 Matthews, SE cor. NE, Section 10-27-5, Osage County, was good for 1,450 bbls. the first 24 hours from sand at 2,925-65 feet. The same company's No. 3, SE cor. SW NE, same section, made 800 bbls. from sand at 2,950-79 feet. No. 4, SW cor. SE NE, same section, was a 500-bbl. well from sand at 2,929-73 feet.

KANSAS

The Independent Oil & Gas Co. sold a half of its one-half interest in the 3,000-acre block in Cowley County on which it and the Waite Phillips Co. drilled their No. 1 Johnson in Section 20-33-3e, last November. The consideration for the quarter interest was $500,000 and the purchaser was the Marland Refining Co.

GULF COAST

HOUSTON, Tex., March 18.—The E. L. M. Oil & Gas Co.'s No. 3 Ochoa pasture, Weeb County (Laredo district) is showing a light gravity oil at 2,100 feet. In the Schott district, Allsworth Brothers' No. 3 is drilling with a derrick up for No. 4. The Carnahan Producing & Refining Co.'s No. 56 is deepening and No. 58 is drilling. The Magnolia Petroleum Co. is deepening Nos. 18 and 19. Shaw and others set casing in No. 1 at 1,900 feet and the McCree Petroleum Co.'s No. 8 set casing. In the Oilton section, the Witherspoon Oil Co. is drilling below 1,520 feet and the Southwest Petroleum Co.'s No. 1 is shut down at 2,000 feet, the contract depth. The hole may be carried to 2,400 feet.

In the Aviators district, the Andrews Petroleum Co.'s No. 3 is drilling with casing set in Black Panther Oil Co.'s No. 7 and a derrick up for No. 8. The Cornhuskers Oil Co.'s No. 1 is below 1,100 feet and No. 2 around 400 feet. O. W. Killiam is drilling No. 2 Albertos at 450 feet and the Radio Oil Co.'s No. 6 is rigging.

In the Wolcott district, Chadlen and others' No. 3 is setting casing at 1,760 feet with a derrick up for No. 4. The Magnolia Petroleum Co.'s No. 2 is deepening; No. 5 is a derrick and No. 6 a location. H. H. Palmer's No. 1 is a derrick and Weslaco Oil Co.'s No. 3 is setting casing at 1,720 feet.

In the Mid-Ojulas district, the Cin-Tex Oil Co.'s No. 4 is below 1,160 feet and Quigg and others' No. 1 at 1,465 feet. The Shasha Oil Co.'s No. 3 is testing. Wheatley and others' No. 6 is around 560 feet.

The Cole Petroleum Co.'s No. 2 near Bruni is showing gas. A derrick is up for No. 4 Neal and others' No. 1, southwest of Bruni, is around 1,600 feet. The Andrews Petroleum Co.'s No. 1 near the Webb-Zapata Counties line is below

(Continued on Page 149)

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By N. O. Fanning
Room 525 No. 30 Church St., New York

NEW YORK, March 17.—Oil securities were dull and unchanged during the week, with the exception of a few high-priced issues. Borne Scrymser featured the Standard Oil group, advancing to a new high of 264, up about 50 points in a few days. The trend of this stock during the last few years has been remarkable. In 1922 a stock dividend of 400 per cent was declared, and the new shares sold initially at around $120 per share. Since then the shares have been creeping up. The present price of the stock represents a high record for all time, and is equivalent to $1,300 per share on the old stock, which never sold above 515.

Borne Scrymser does a large business in compounding and marketing lubricating oils. It markets both here and in the United Kingdom. The company paid $12 per share in dividends on its $1,000,000 capital stock (par $100) in 1923, which is equivalent to $60 on the old stock. The 1923 dividends were the largest ever paid. The rise in the stock is a mystery inasmuch as the company earned little more than its dividend in 1923, and its surplus, according to the latest report, would allow a 50 per cent stock dividend, but this would leave the company with practically no margin in the profit and loss surplus account. In view of the steady expansion of its business, and comparatively small capitalization, it is believed Borne Scrymser may do some public financing.

Chesebrough Manufacturing

Chesebrough Manufacturing stock also featured the market for Standard Oils. The plan to reduce the par value and declare a 100 per cent stock dividend has been approved. The new $25 par value Chesebrough stock is traded in on a "when issued" basis for around $52 per share. This is the figure at which Blair & Co. are offering approximately 20,000 shares for public subscription.

Pennok Oil Report

The Pennok Oil Co. reports for the year ended December 31, 1923, net earnings of $1,997,992 after federal taxes, depletion and depreciation, equivalent to $5.32 per share (par $10) earned on the outstanding $3,750,000 capital stock. This compares with net loss of $276,625 in 1922.

The income account for the year ended December 31, 1923, compares as follows:

	1923	1922
Gross earnings	$ 3,873,736	$ 1,079,535
Expenses	477,903	343,099
Operating profit	$ 3,395,833	$ 736,436
Federal taxes, depreciation, depletion	1,132,054	411,085
Abandoned leases, etc.	265,787	601,976
Net earnings	$ 1,997,992	*$ 276,625
Dividends	375,000	150,000
Surplus	$ 1,622,992	†$ 426,625

*Loss. †Deficit.

The balance sheet of Pennok Oil Co. shows cash and call loans amounting to $2,573,576 and surplus at close of year of $1,925,335.

Union Tank Car

Union Tank Car Co. reports for the year ended December 31, 1923, net income of $4,105,399 after depreciation, federal taxes and reserve for annuities. After payment of preferred dividends, balance was equivalent to $18.14 per share earned on $18,000,000 common stock (par $100).

The Texas Co. reports for the year ended December 31, 1923, net income of $8,197,582 after federal taxes, depreciation and inventory adjustments, equivalent to $1.24 per share (par $25) earned on $164,450,000 capital stock. This compares with $26,588,972, or $4.04 per share, earned in 1922.

After payment of dividends there was a deficit in 1923 of $11,536,418. Profit and loss surplus was $88,477,435, against $94,476,396 at the close of 1922.

Dividends were paid during 1923 at the rate of $3 per share, as against net earnings available for the stock for the year of $1.24 per share.

Amos L. Beaty, president of the company, states that stocks of crude and refined oil on hand at the close of 1923 amounted to approximately 40,000,000 barrels. Inventory as shown in the balance sheet was valued at $84,279,977, against $85,146,569 at the close of 1922, $64,450,881 at the close of 1921 and $98,219,867 at the end of 1920.

The consolidated income account of The Texas Co. for 1923 compares as follows:

	1923	1922
Gross earnings	$118,422,367	$130,996,907
Expenses, etc.	87,546,576	80,576,902
Net earnings	$ 30,875,791	$ 50,420,005
Inventory adjust.	6,495,482	7,402,518
Depre., taxes, etc.	16,182,727	16,428,515
Net income	$ 8,197,582	$ 26,588,972
Dividends	19,734,000	19,734,000
Deficit	$ 11,536,418	*$ 6,854,972

NEW YORK STOCK EXCHANGE—LIST OF ACTIVE STOCKS

No.	Stock—	Par	†Dividend Rate	Closing Quotations Mar. 18	Mar. 11	Range High	Low 1924
1.	American Republics	..	..	*39	*39	43	25
2.	Associated Oil	25	6	30¼	32	34⅝	28¼
3.	Atlantic Refining, common	100	4	122½	125½	140½	122½
4.	Barnsdall "A"	25	..	16	*17½	18⅛	14
5.	Caddo Central Oil	..	..	1⅝	3	4¼	1⅝
6.	California Petroleum, common	25	7	23¾	25¼	29¼	23⅛
7.	Cosden & Co., common	..	..	34⅝	35⅞	40¼	32
8.	General American Tank	..	†3	*40	41¼	46¼	43
9.	General Asphalt	100	..	38⅛	49	49	37⅝
10.	Houston Oil	100	..	68	71½	82½	66
11	Independent Oil & Gas	10	..	6⅝	7⅞	8¼	6⅝
12.	Indian Refining	10	..	*4	*4	5⅜	4¼
13.	Invincible Oil	50	..	14	14⅛	15⅞	12¾
14.	Maracaibo	..	..	28⅝	30½	37½	25½
15.	Marland	..	..	35⅞	37⅝	42	35½
16.	Mexican Seaboard	..	..	18	19⅝	24½	14½
17.	Middle States Oil	10	..	4⅝	4⅝	6⅞	4½
18.	National Supply	50	6	67	*67½	72¼	64½
19.	Pacific Oil	..	†2	50⅜	52⅛	58¼	48¼
20.	Pan-American, common	50	16	47½	50	61¼	44¼
21.	Panhandle Prod. & Ref.	..	..	*2½	*3	4½	2¼
22.	Phillips Petroleum	..	†2	38⅞	40⅝	42¼	33⅝
23.	Pierce Oil, common	25	..	2½	2⅞	4½	2⅝
24.	Producers & Refiners	50	..	33	34⅞	43½	32½
25.	Pure Oil Co., common	25	6	23½	24⅝	26⅜	23⅛
26.	Royal Dutch, N. Y., sh.	13.40	2.62	53	53	59½	48
27.	Shell Transport	10	x92⅛	*39	*38	41⅛	33
28.	Shell Union, common	..	†1	18½	18⅝	20⅛	16⅝
29.	Simms Petroleum	10	..	13⅝	12½	14⅛	10⅝
30.	Sinclair Consolidated, common	..	†2	22½	24¼	27⅛	19⅞
31.	Skelly Oil	25	..	23½	25	29	23⅛
32.	Standard of California	25	8	60⅛	62½	68½	58⅝
33.	Standard Oil of N. J.	25	4	36⅞	38¼	42¼	37½
34.	Standard of New Jersey, pfd.	100	7	117	*117	118⅝	116⅝
35.	Superior Oil	..	..	4½	4	4¼	2⅝
36.	The Texas Co.	25	12	41⅝	42½	45⅝	41½
37.	Texas & Pacific Coal & Oil	10	..	10¼	11	15⅛	10
38.	Tide Water Oil	100	4	131	138	151	120
39.	Transcontinental	..	..	4⅛	4	6¼	4
40.	Union Tank, common	100	5	101	*97	102½	94
41.	White Eagle Oil & Ref.	..	2¼	25½	26½	29¼	25
	Standard Oil Stocks						
42.	Anglo-American Oil	£1	20	17⅛	16⅝	18	15⅝
43.	Borne Scrymser	100	12	235	255	264	150
44.	Buckeye Pipe Line	50	14	71	70½	85½	66
45.	Chesebrough Mfg., com.	100	14	401	412½	412½	234
46.	Continental Oil	25	8	*45½	*48	54⅞	42½
47.	Crescent Pipe Line	25	..	*16½	16½	29	16
48.	Cumberland Pipe Line	100	10	132	*136	144	109
49.	Eureka Pipe Line	100	8	98½	*99	105	96½
50.	Galena-Signal, common	100	4	62½	62	69¾	62
51.	Humble Oil & Ref.	25	4.8	41	42⅝	43¾	37⅝
52.	Illinois Pipe Line	100	16	144	*143	161	136
53.	Imperial Oil, Ltd.	25	16	107	108	119	106½
54.	Indiana Pipe Line	50	16	93	94½	100	85
55.	International Pet. Co.	..	x50	18⅞	20⅛	22¼	19¼
56.	Magnolia Petroleum	100	4.5	143⅝	146	162	142
57.	National Transit	12.50	16	22⅛	*22	26⅞	21½
58.	New York Transit	100	10	83½	*81	97	78
59.	Northern Pipe Line	100	25	*101	*101	107½	93½
60.	Ohio Oil Co.	25	4	67¼	71	79½	67
61.	Penn-Mex Fuel	25	..	*35	*36	45⅝	34
62.	Prairie Oil & Gas	100	8	235	245	269	220
63.	Prairie Pipe Line	100	8	105	103½	111	101
64.	Solar Refining Co.	100	15	195	205	230	170
65.	Southern Pipe Line	100	16	95	95	100	89½
66.	South Penn Oil	100	..	157	161	161	76
67.	South West Pa. Line	100	8	84	87	89	80
68.	Standard of Indiana	25	10	60¼	62¼	63⅜	59⅝
69.	Standard of Kansas	25	8	41½	62¼	63⅜	59⅝
70.	Standard of Kentucky	25	16	111½	113⅜	120	107
71.	Standard of Nebraska	100	20	238	228	256½	198
72.	Standard Oil of N. Y.	25	5.6	42½	43⅜	48	45
73.	Standard of Ohio, common	100	10	324	323	336	305
74.	Swan & Finch	100	..	55	61	81	34
75.	Vacuum Oil	25	10	61	64	69¼	56½
76.	Washington Oil	10	..	*28	*28	27	25
	Miscellaneous Stocks						
77.	Cities Service, banker's shares	..	†21	14½	14⅝	16	14½
78.	Gulf Oil Corp. of Pa.	25	6	60½	60⅞	65	58⅛

*Bid, no sales. †In dollars. ‡6 per cent in cash and 15 per cent stock dividend declared; now being paid in scrip. §The figures carried in this column are kept up-to-date as far as possible but are not guaranteed. xCents per share

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange weekly was as follows:

Mar. 18	51.53	Feb. 11	55.67	Jan. 8	52.68
Mar. 11	53.38	Feb. 5	57.46	Dec. 30	53.77
Mar. 4	52.38	Jan. 29	55.40	Dec. 24	52.28
Feb. 25	53.13	Jan. 22	53.90	Dec. 18	51.20
Feb. 18	52.24	Jan. 15	53.70	Dec. 11	49.27

Previous surplus	94,476,396	83,549,301
Total surplus	$ 82,939,978	$ 90,404,133
Surplus of subsid. companies	.....	1,395,178
Adjustment cr.	5,537,457	†2,779,807
Profit and loss surplus	$ 88,477,435	$ 94,476,396

*Surplus. †Adjustment affecting reserve for replacement marine equipment.

The consolidated balance sheet of The Texas Co. as of December 31, 1923, compares as follows:

Assets	1923	1922
Plant, equip., etc.	$342,442,272	$317,597,115
Other investments.	1,608,227	896,737
Supplies	8,433,101	8,972,683
*Inventory	84,279,977	85,146,569
Deferred charges..	1,335,086	423,940
Accounts and notes receivable	18,183,861	18,171,336
Cash	14,370,510	14,338,631
Total	$370,653,044	$345,535,031
Liabilities		
Capital stock	$164,450,000	$164,450,000
Def. purchase obligations	3,493,642	3,866,156
Accounts and notes payable	36,277,870	13,198,942
Miscellaneous	1,318,996	3,906,633
Amortization reserve	2,552,542	4,466,640
Deprec. reserve	74,082,567	63,995,677
Surplus	88,477,435	94,476,396
Total	$370,653,044	$345,535,031

*Reduced to market which was lower than cost.

Tide Water Oil Report

The report of the Tide Water Oil Co. for the year ended December 31, 1923, shows net income of $2,908,217 after depletion and depreciation, but before federal taxes, equivalent to $5.81 per share (par $100) earned on the $49,990,800 capital stock, against $4,923,317, or $9.91 per share, earned on $49,673,500 stock in 1922.

The consolidated income account of Tide Water Oil Co. and subsidiaries for 1923, compares as follows:

	1923	1922
Gross earnings	$ 58,274,731	$ 52,436,035
Operating expenses	51,912,201	46,763,201
Operating income	$ 6,362,530	$ 5,673,734
Other income	926,431	3,138,233
Total income	$ 7,288,961	$ 8,803,967
Deprec. and deplet.	4,476,775	3,880,900
Net income	$ 2,812,186	$ 4,975,067
Outside stock pro.	96,031	*52,050
Tide Water stock pro.	$ 2,908,217	$ 4,923,317
Dividends	499,968	.....
Surplus	$ 2,408,249	$ 4,923,317

*Debit.

The consolidated balance sheet of the Tide Water Oil Co. and subsidiaries as of December 31, 1923, compares as follows:

Assets	1923	1922
Plant, equip. etc., after deprec. and depletion	$ 59,604,435	$ 56,511,117
Other investments.	963,410	951,110
Invest. in affil. cos.	6,824,693	6,951,300
Cash	1,359,568	1,701,300
Liberty bonds	2,801,016	3,100
Accts. and notes receiv.	4,743,891	5,161,305
Crude oil and products	11,890,617	12,391,305
Due from affil. cos.	54,160	1,457,122
Materials and sup.	1,579,070	1,413,611
Deferred charges	1,504,826	1,316,300
Total	$ 91,325,686	$ 90,366,170
Liabilities		
Capital stock	$ 49,990,800	$ 49,673,500
Gold bonds	12,000,000	12,000,000
Min. int. in subs.	630,042	732,000
Notes payable	291,521	462,400
Accounts payable	3,640,258	2,564,633
Due affil. cos.	181,939	504,000
Bank loans	.....	1,500,000
Accrued taxes	41,028	30,000
Capital stock subscriptions	237,052	616,000
Deferred liabilities	1,305,046	1,753,370
Reserve for conting	3,726,858	3,656,367
Surplus	19,172,142	17,328,000
Total	$ 91,325,686	$ 90,366,170

R. D. Benson, chairman of the board.

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(Continued from Page 23)

Tr. No.	Description	Acreage	Purchaser	Bonus
468	NW 6-28-10	160	Passed.	
469	SW 5-28-10	160	Passed.	
469	NE 17-28-10	160	Passed.	
470	NW 17-28-10	160	Passed.	
471	NE 23-28-10	160	E. L. Connelly, et al	900.00
472	SE 23-28-10	160	Passed.	
473	SE 29-28-10	160	Passed.	
474	SE 33-28-10	160	Passed.	
475	SE 13-29-10	160	Passed.	
476	SE 15-29-10	160	Indian Territory Illum. Oil Co.	1,000.00
477	SW 15-29-10	160	H. P. White	1,200.00
478	NW 22-29-10	160	Passed.	
479	SW 22-29-10	160	Passed.	
480	SE 30-29-10	160	Passed.	
481	SW 30-29-10	160	Passed.	
482	SE 1-21-9	160	Passed.	
483	NE 3-21-9	160	Skelly Oil Co., Ohio Osage Oil Co. & C. L. Moore	500.00
484	NW 3-21-9	160	Skelly Oil Co., Ohio Osage Oil Co. & C. L. Moore	500.00
485	SE 6-21-9	160	E. J. Black	500.00
486	SW 6-21-9	160	Passed.	
487	NW 23-21-9	160	Chas. Page & A. M. Landon	600.00
488	SW 23-21-9	160	Gypsy Oil Co.	12,500.00
489	NW 24-21-9	160	Carroll Miller, Tr.	1,000.00
490	SW 24-21-9	160	Alcorn Oil Co.	1,200.00
491	NE 9-22-9	160	Passed.	
492	SW 9-22-9	160	Passed.	
493	NE 11-22-9	160	Passed.	
494	SE 11-22-9	160	Passed.	
495	SW 11-22-9	160	Passed.	
496	SE 33-22-9	160	Skelly Oil Co., Ohio Osage Oil Co. & C. L. Moore	1,300.00
497	SW 34-22-9	160	Skelly Oil Co., Ohio Osage Oil Co. & C. L. Moore	2,100.00
498	NW 35-22-9	160	Passed.	
499	NE 1-23-9	160	A. G. Oliphant	500.00
500	SE 1-23-9	160	Alcorn Oil Co.	2,000.00
501	NW 18-23-9	160	Sinclair Oil & Gas Co.	5,000.00
502	SE 18-23-9	160	Peter Admondson	800.00
503	SE 31-23-9	160	Rupert Drilling Co.	500.00
504	NE 33-23-9	160	Passed.	
505	SW 33-23-9	160	Passed.	
506	NW 4-24-9	160	Passed.	
507	SW 4-24-9	160	Passed.	
508	NE 6-24-9	160	A. G. Oliphant	4,300.00
509	NW 6-24-9	160	A. M. Meeks	3,700.00
510	SE 16-24-9	160	Tidal Oil Co.	5,400.00
511	SW 16-24-9	160	Tidal Oil Co.	14,000.00
512	NE 2-25-9	160	Amerada Pet. Corp.	600.00
513	SW 5-25-9	160	Passed.	
514	NW 18-25-9	160	Passed.	
515	SW 18-25-9	160	Passed.	
516	SE 30-25-9	160	Devonian Oil Co.	3,100.00
517	NW 5-26-9	160	Passed.	
518	SW 5-26-9	160	Passed.	
519	NE 6-26-9	160	Passed.	
520	SE 23-26-9	160	Dresser Oil Co.	500.00
521	SW 23-26-9	160	Dresser Oil Co.	700.00
522	SE 24-26-9	160	Passed.	
523	SW 24-26-9	160	Passed.	
524	SE 36-26-9	160	Passed.	
525	NE 2-27-9	160	Western American Oil Co.	500.00
526	NE 3-27-9	160	Western American Oil Co.	500.00
527	SE 7-27-9	160	G. K. McKinley et al	700.00
528	SW 7-27-9	160	G. K. McKinley et al	500.00
529	SE 16-27-9	160	C. E. Weber et al	500.00
530	SW 16-27-9	160	C. E. Weber et al	500.00
531	SW 29-27-9	160	Passed.	
532	NE 22-27-9	160	Passed.	
533	NE 25-27-9	160	Passed.	
534	NW 25-27-9	160	Indian Territory Illum. Oil Co.	500.00
535	SE 31-27-9	160	Passed.	
536	SW 31-27-9	160	Passed.	
537	NW 36-27-9	160	Midland Oil Co.	500.00
538	NE 9-28-9	160	Carrol Miller, Tr.	500.00
539	NW 9-28-9	160	Passed.	
540	SE 13-28-9	160	Passed.	
541	SW 14-28-9	160	Long Drilling Co.	500.00
542	NW 18-28-9	160	Midland Oil Co.	500.00
543	NE 19-28-9	160	Wiser Oil Co.	1,000.00
544	SE 19-28-9	160	L. C. Hivick	600.00
545	NE 24-28-9	160	Passed.	
546	SE 24-28-9	160	Passed.	
547	SW 24-28-9	160	Passed.	
548	NW 13-29-9	160	Passed.	
549	SW 13-29-9	160	Passed.	
550	SE 23-29-9	160	Passed.	
551	SW 33-29-9	160	Carrol Miller, Tr.	500.00
552	SE 36-29-9	160	Passed.	
553	SW 36-29-9	160	Passed.	
554	SW 6-22-8	160	Passed.	
555	SW 11-22-8	160	Carrol Miller, Tr.	800.00
556	SW 21-22-8	160	Alcorn O'l Co.	10,000.00
557	NW 29-22-8	160	Thompson & Black	1,300.00
558	SW 29-22-8	160	C. E. Weber	500.00
559	SW 20-23-8	160	Redbank Oil Co.	230,000.00
560	NE 2-24-8	160	Sitrin Bros.	500.00
561	NW 2-24-8	160	Ernest McCarty	600.00
562	SE 9-24-8	160	Indian Territory Illum. Oil Co.	8,600.00
563	NE 17-24-8	160	W. M. Adlum	1,100.00
564	SE 18-24-8	160	C. B. Peters et al	5,000.00
565	NE 19-24-8	160	Atlantic Oil Prod. Co.	13,000.00
566	NW 8-25-8	160	Atlantic Oil Prod. Co.	17,000.00
567	NE 13-25-8	160	Passed.	
568	SW 19-25-8	160	A. G. Oliphant et al	900.00
569	SW 25-25-8	160	Ernest McCarty	500.00
570	SE 26-25-8	160	Passed.	
571	SE 29-25-8	160	The Texas Co.	42,000.00
572	NE 32-25-8	160	A. G. Oliphant et al	2,500.00
573	NE 5-26-8	160	Aaron Cohen	500.00
574	SW 7-26-8	160	C. F. Noble	500.00
575	SE 8-26-8	160	Passed.	
576	SW 10-26-8	160	Peter Adamson	800.00
577	NW 15-26-8	160	Bement Oil Co.	700.00
578	NE 17-26-8	160	Passed.	
579	NW 18-26-8	160	C. F. Noble	2,500.00
580	SE 21-26-8	160	The Texas Co.	3,100.00
581	SE 26-26-8	160	Indian Territory Illum. Oil Co.	4,500.00
582	SW 28-26-8	160	H. P. White	1,000.00
583	NE 32-26-8	160	Indian Territory Illum. Oil Co.	5,000.00
584	NE 33-26-8	160	L. C. Hivick	1,000.00
585	SW 35-26-8	160	Stewart & Baggaly	500.00
586	SE 36-26-8	160	Midland Oil Co.	500.00
587	NW 6-27-8	160	Passed.	
588	SW 6-27-8	160	Passed.	
589	SE 8-27-8	160	Passed.	
590	NW 11-27-8	160	Passed.	
591	SW 11-27-8	160	Passed.	
592	SE 16-27-8	160	Passed.	
593	SW 16-27-8	160	Passed.	
594	NE 2-28-8	160	Passed.	
595	SW 2-28-8	160	Passed.	
596	NE 5-28-8	160	Passed.	
597	SE 5-28-8	160	Passed.	
598	SW 11-28-8	160	Passed.	
599	SW 16-28-8	160	Indian Territory Illum. Oil Co.	1,500.00
600	NE 20-28-8	160	Superior Oil Corp.	800.00
601	SE 20-28-8	160	Passed.	
602	NW 34-28-8	160	Passed.	
603	SE 34-28-8	160	Passed.	
604	SW 34-28-8	160	Passed.	
605	SE 13-29-8	160	Passed.	
606	NW 16-29-8	160	Passed.	
607	NE 16-29-8	160	Passed.	
608	SE 19-29-8	160	Superior Oil Corp.	1,400.00
609	NW 20-29-8	160	Passed.	
610	NE 27-29-8	160	Passed.	
611	NW 27-29-8	160	Passed.	
612	NE 30-29-8	160	Superior Oil Corp.	1,400.00
613	NW 30-29-8	160	Superior Oil Corp.	1,100.00
614	Total	47,198.15	Total East Side	$ 517,800.00

West of Range 8

Tr. No.	Description	Acreage	Purchaser	Bonus
615	SE 2-22-7	160	Alcorn Oil Co.	500.00
616	SW 6-26-7	160	Knupp Oil Co.	900.00
617	SE 16-28-7	160	Smith, McCray & Dwyer	1,600.00
618	SW 16-28-7	160	Bement O.l Co.	1,500.00
619	NW 21-28-7	160	Gypsy Oil Co.	3,500.00
620	SE 1-26-6	160	Mary Brockman	1,000.00
621	SW 17-27-6	160	C. B. Peters et al	37,000.00
622	NW 20-27-6	160	Phillips Petroleum Co.	75,000.00
623	SE 20-27-6	160	Phillips Petroleum Co.	24,000.00
624	SE 3-27-5	160	Gypsy Oil Co.	151,000.00
625	SW 11-27-5	160	Phillips Petroleum Co.	1,765,000.00
626	NW 14-27-5	160	Midland Oil Co.	1,990,000.00
627	NW 26-27-5	160	Mid-Kansas Oil & Gas Co.	670,000.00
628	SW 26-27-5	160	Skelly Oil Co.	335,000.00
629	NW 35-27-5	160	Skelly Oil Co.	205,000.00
630	NE 9-25-4	160	Alcorn Oil Co.	3,100.00
631	NW 9-25-4	160	The Texas Co.	3,500.00
632	SE 9-25-4	160	The Texas Co.	3,900.00
633	SW 9-25-4	160	Alcorn Oil Co.	1,900.00
	Total	3,040	Total	$ 5,333,400.00

Tracts Passed March 18 and Sold March 19

Tr. No.	Purchaser	Bonus
321	Beacon O l Co.	500.00
322	Beacon Oil Co.	500.00
323	J. J. Fitzstephens	500.00
325	J. J. Fitzstephens	500.00
343	Indian Territory Illum. Oil Co.	500.00
344	Indian Territory Illum. Oil Co.	500.00
368	Dye & Tomlinson	500.00
369	Dye & Tomlinson	1,500.00
437	Adamson & Gibson	500.00
443	Duffield & Howard	500.00
493	Alcorn Oil Co.	500.00
508	Ernest McCarty	500.00
	Total Tuesday, March 18	$ 8,342,600.00
	Total Wednesday, March 19	5,851,200.00
	Grand total	$14,193,800.00

FIRST DAY'S SALE OF OSAGE LEASES

(Continued from Page 24)

Tr. No.	Description	Acreage	Purchaser	Bonus
272	NW 8-27-8	160	Bement Oil Co.	500.00
273	NE 10-27-8	160	Passed.	
274	SE 10-27-8	160	Passed.	
275	SW 15-27-8	160	Stewart & Baggaly	500.00
276	NW 22-27-8	160	Stewart & Baggaly	500.00
277	NE 29-27-8	160	Stewart & Baggaly	1,100.00
278	SE 29-27-8	160	Stewart & Baggaly	900.00
279	SW 29-27-8	160	Stewart & Baggaly	1,100.00
280	NE 1-28-8	160	Passed.	
281	SW 1-28-8	160	Passed.	
282	NE 3-28-8	160	Beacon Oil Co.	1,000.00
283	NW 4-28-8	160	Passed.	
284	SW 4-28-8	160	Stine Drilling Co., Tulsa	1,100.00
285	NE 11-28-8	160	Passed.	
286	SE 12-28-8	160	Passed.	
287	NE 16-28-8	160	Dye & Tomlinson	1,200.00
288	SE 16-28-8	160	Beacon Oil Co.	1,100.00
289	NE 19-28-8	160	Passed.	
290	NW 21-28-8	160	Passed.	
291	SW 21-28-8	160	Beacon O'l Co.	1,600.00
292	NE 32-28-8	160	Stewart & Baggaly	900.00
293	SE 32-28-8	160	Indian Territory Illum. Oil Co.	1,900.00
294	NE 13-29-8	160	Passed.	
295	NW 13-29-8	160	Passed.	
296	NE 18-29-8	160	Dye & Tomlinson	500.00
297	SW 18-29-8	160	Dye & Tomlinson	500.00
298	SE 27-29-8	160	Passed.	
299	SW 27-29-8	160	Western American Oil Co.	500.00
300	NW 29-29-8	160	Dye & Tomlinson	1,500.00
	Total	47 507.23	Total	$ 290,600.00

West of Range 8

Tr. No.	Description	Acreage	Purchaser	Bonus
301	NE 2-22-7	160	Alcorn Oil Co.	1,100.00
302	NW 6-26-7	160	Bement Oil Co.	800.00
303	NW 34-27-7	160	Passed.	
304	SW 34-27-7	160	Passed.	
305	NE 1-26-6	160	Knupp Oil Co.	700.00
306	SE 18-27-6	160	Kewanee Oil & Gas Co.	285,000.00
307	SW 18-27-6	160	Twin State Oil Co.	605,000.00
308	SE 13-27-5	160	Midland Oil Co.	1,580,000.00
309	SW 13-27-5	160	Prairie Oil & Gas Co.	1,825,000.00
310	SE 14-27-5	160	Cosden Oil & Gas Co.	1,955,000.00
311	SW 14-27-5	160	Cosden Oil & Gas Co.	1,790,000.00
312	NW 6-23-4	160	Indian Territory Illum. Oil Co.	2,100.00
313	SW 6-23-4	160	Dye & Tomlinson	1,700.00
314	NW 22-25-4	160	Alcorn Oil Co.	1,700.00
315	NE 1-23-3	160	Alcorn Oil Co.	1,900.00
316	SE 1-23-3	160	Alcorn Oil Co.	2,000.00
	Total	2,560	Total	$8,052,000.00

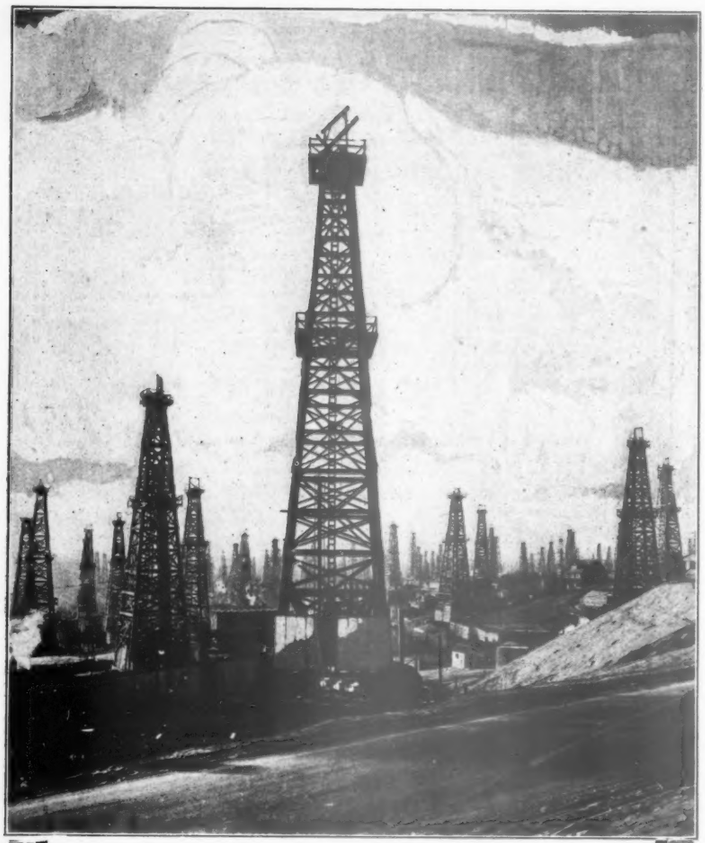
President Teagle Cites Inventories On Falling Output

NEW YORK, March 18.—Walter C. Teagle, president of the Standard Oil Co. of New Jersey, said today:

"If the Government figures for January are complete, it would seem the oil supply and demand might meet sooner than was indicated by figures from the same source last fall; in other words, at the end of March, or early in April, instead of by the latter part of May or June."

Mr. Teagle said a very large portion of the country's daily production, which made new high records last fall, came from flush pools. When the large wells began to fall off, he said, the decline in production figures were noticeable at once.

"Just consider the Government's statistics covering the last few months," Mr. Teagle added. "As recently as November, storage increase averaged 374,000 barrels daily for all oil inventories. For January these statistics show a surplus of but 5,840 barrels daily. The Government's figures for January show all but 1 per cent of last November's 374,000 barrels daily excess has been eliminated, due to larger demand and declining crude production, mainly the latter. In 1923 excess of all oil, crude and refined, averaged 314,000 barrels daily. In December, excess had receded to 193,000 barrels, while in January this year it was just over 5,000 barrels a day.



Signal Hill, Long Beach, California

The well in the foreground is Well No. 12 of the Dabney Oil Syndicate at Signal Hill, Long Beach, California. Republic casing was used successfully in this and many other wells shown in the picture. An average length string was used, comprising 3430 ft. of 6¼", R X casing and 2929 ft. of 10" R X casing.

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		Birmingham

OKLAHOMA FIELDS

(Continued from Page 38)

good for 105 bbls. the first 24 hours, was shot with 140 quarts in sand at 2,846-2,924 feet and increased to 150 bbls. The Carter Oil Co.'s No. 1, NW cor. Section 9-26-6, was moving in tools to drill deeper at 2,804 feet.

J. J. Scanlin was drilling at 750 feet in No. 1, NW cor. SW, Section 33-26-8.

A 30-bbl. producer was brought in by Skelton & Moore in their No. 8 C SW SE, Section 32-26-12, after a 120-quart shot in the Bartlesville sand reached at 1,606-37 feet. The Owen-Osage Oil Co. was drilling at 1,800 feet in its No. 278, SW cor. SE SE, Section 10-27-11.

Considerable new work was going on in the area just west and southwest of Pawhuska. The Delmar Oil Co. was spudding its No. 1, SW cor. SE, Section 27-25-8, and E. B. Lawson was straight-reaming his No. 1, NW cor. SW, Section 28-25-8, at 800 feet, with total depth at 920 feet. The Mid-Kansas Oil & Gas Co. had a rig on the ground for its No. 1, NW cor. NE, Section 34-25-8. The Marland Refining Co.'s No. 2, CNL NW NW NW, same section, was shut down at 500 feet for water and the Test Log Oil Co.'s No. 4, CEL SE NE NE, Section 16-24-8, was shut down at 100 feet for the same reason. The Mutual Oil Co. had the 8-inch pipe set at 630 feet in its No. 11, C NE SE, Section 32-24-8, and was drilling ahead at 635 feet. McKeon & Mallory were rigging up a machine for their No. 7, C NW NE, Section 10-23-8.

Shot Brings 200-Bbl. Well.

A 200-bbl. well resulted from a shot of 180 quarts in Foster, Davis & London's No. 8, CEL W half NE, Section 17-25-9. The shot was given in the Bartlesville sand at 2,004-48 feet. This well had a 5-bbl. showing with 500,000 feet of gas in the Oswego lime at 1,687-1,702 feet. The New England Oil Co. was moving in a rig for its No. 9, C SW SW, Section 19-25-9, and H. V. Foster was runing the 10-inch casing in his No. 3, CSL SE, Section 22-24-9. Foster & Norwood were drilling at 1,300 feet in their No. 42, CEL NW SE, Section 23-24-9, and the Kay County Gas Co. was drilling at 390 feet in its No. 19, C SW NW, Section 26-24-9. Oliphant and others had a rig up for their No. 4, C NW NE NW, Section 32-24-9, and were spudding their No. 2, CNL NW SE, same section. They also had a rig on the ground for their No. 3, CWL NW SE, same section. Peters and others were running the 8-inch casing at 965 feet in their No. 4, CEL NE SE NW, Section 33-24-9.

The Wynona Oil Co. was spudding its No. 7, CNL NE SE, Section 28-24-10. A 30-quart shot brought in a 10-bbl. producer in the Flesher Petroleum Co. and the Superior Oil Co.'s No. 2, CEL NE NW SE, Section 13-23-10. The Cosden Oil & Gas Co. was moving in a machine for its No. 11, NW cor. NE, Section 23-23-10, and Heggem & Davis had a rig up for their No. 14, CWL SW SW, Section 35-23-10. The same interests were also spudding their No. 16, SW cor., same section.

A 5,000,000-foot gasser in the second break in the lime was shut in by the Owen-Osage Oil Co. in its No. 271, CWL SE SW, Section 9-22-11. The Bartlesville sand carrying 1,250,000 feet of gas was passed through at 1,625-45 feet and the Mississippi lime was found at 1,822 feet, the second break, with the big gas capacity, coming at 2,099-2,102 feet. T. K. Smith had a failure in his No. 1, SE cor. SW, Section 16-22-12, at 2,020 feet.

The U. S. Oil & Gas Co and others were drilling at 350 feet in their No. 7, CEL SE NE, Section 25-21-11, a twin to their No. 2, and J. C. Stine's No. 1, CEL SW, Section 9-21-12, was drilling at 210 feet. The Fidelity Oil Co. was spudding its No. 4, NE cor. Section 16-21-12, and the Selby Oil Co. was moving in material for No. 3, CWL NW, same section. The Verland Oil Co. was drilling at 1,010 feet in its No. 6, CSL NE, Section 17-21-12, and F. A. Gillespie was below 360 feet in his No. 10, CSL SW NE SW, Section 30-21-12. The Peer Oil Corp. and others were drilling their No. 1-A, CSL NW NE, Section 12, at 110 feet.

Sand Springs Home Well

A 25-bbl. well from the Bartles sand at 1,767-1,805 feet was brought by the Sand Springs Home in its 1, NW cor. SW NE, Section 21-[illegible]. The Barnsdall Oil Co.'s No. 22, C NW NW, Section 9-20-12, was good 85 bbls. the first 12 hours from 2,046-52 feet, and made 200 bbls. first 24 hours. The Tidal-Osage Oil reached the second break in the lime 2,122-26 feet in its No. 2, CSL SW Section 21-20-12 and it was good for bbls. the first 24 hours. The Oil Co. was drilling at 1,580 feet in No. 6, CNL NW SE NW, Section 20-12.

The Mutual Oil Co. was pumping bbls. from its No. 20-B, SE cor. NE tion 32-24-8, from the Mississippi at 2,339-62 feet.

The Sinclair Oil & Gas Co.'s No. CNL NE SE, Section 32-22-10, was timated at 60 bbls. and was flowing heads from the Bartlesville sand 1,810-90 feet, total depth being 1,[illegible] feet. The Tidal-Osage Oil Co.'s No. CSL SE NE, same section, an old topped the lime at 1,942-65 feet and duced 859 bbls. the first 24 hours, was also showing some water. J. Alexander and others were pumping to the Burgess sand at 2,030-85 feet their No. 41, NE cor. SE NE, Section 33-22-10, where it was pumping 40 The Tidal-Osage Oil Co.'s No. 30, SE SE NW, Section 34-22-10, topped second break at 2,323 feet and made bbls. the first 15 hours with the lime foot in. It was drilled to 2,328 feet produced 920 bbls. the first 24 hours. The Riverland Oil Co.'s old well, No. SE cor. NE NW, Section 19-22-11, pumping 65 bbls. from the second lime at 1,972-75 feet.

The Midland Oil Co. had a rig on ground for its No. 1, NE cor. SW tion 12-25-5. The Devonian Oil Co. building a rig for its No. 9, CWL Section 34-25-11, and was moving machine for No. 10, CEL NE NW section.

Pawnee County Work

In Pawnee County, the Magnolia troleum Co. had a rig on the ground its No. 1, SW cor. Section 9-20-8, the Southwestern Oil Fields was ding its No. 8, CEL NW, Section 20-20-8. Suppes & Wesson were drilling 700 feet in their No. 1-A Hamilton, cor. NE NE, same section.

In Lincoln County, the Magnolia troleum Co. had 10,800,000 feet of gas its No. 1 Wilson, SW cor. SE NW, tion 18-14-5, from sand at 2,583-86 with a break at 2,586-91.

In Stephens County, east of Duncan, the Midland Oil Co. was swabbing 40 bbls. from its No. 1 Ashalintubbi, cor. SE NW, Section 11-1n-5w, sand at 1,065-70 feet, but will probably drill deeper. The same company's 2, CEL SE NW, same section, was ing at 690 feet. South of Duncan, Magnolia Petroleum Co. was rigging the rotary for No. 6 Wilson, SE cor. tion 17-2s-7w, and the Mid-Kansas & Gas Co. was drilling at 50 feet in No. 2 J. Simpson, SE cor. NE SW, tion 18-2s-7w. Two 20-bbl. wells brought in by I. R. McQueen. They No. 6 Britton, CNL SW SW, Section 1s-8w, from sand at 2,261-85 feet. No. 7 Rockwood, CWL SW SW, section, from sand at 2,260-70 feet. latter was drilling ahead at 2,297 Malernee and others were rigging rotary for their No. 6 Britton, CSL SW, same section.

In southeastern Grady County, ter Critchlow had a 35,000,000-foot ser in his No. 1-A Cochran, NW SW NW, Section 27-3n-5w, from sand at 1,350-57, 1,372-75, 1,382-93 and 1,[illegible] 18 feet.

Vern and Bruner Pools

In Tulsa County, the Vern and Bruner Pools just west of Tulsa were revived, attaining the proportions of real oil fields and much new work was going on. The Sand Springs Home's No. 1 [illegible] Cities, CSL NE NW SE, Section 12, made 1,600 bbls. natural the 24 hours from oil pay at 2,095-2,[illegible]

Black & Thompson's No. 1 Bruner, NW cor. SE SE, same section, which produced 1,804 bbls. the first 24 hours natural from sand at 2,048-54 feet, was making 1,100 bbls. A rig was in place for the Sand Springs Home's No. 3 Twin Cities, NE cor. NW SE, same section, and the same interests were rigging up their No. 6 Bruner, CNL SE SE, same section. The Home's No. 1 E. Bruner, CEL NE NE SW, same section, was dry and abandoned at 2,210 feet. Minshall and others had a rig up for their No. 1-A E. Bruner, SE cor. SW NE, Section 6-19-12, and Williams and others were building a rig for No. 1 Townsite, SE cor. Section 5-19-12. The Echo Oil Co. was drilling at 275 feet in its No. 2-A Grayson, CEL SE NE, same section. The Shaffer Oil & Refining Co. was spudding its No. 2-A Partridge, CWL SW NW, Section 4-19-12, and was rigging up a machine for No. 3-A Partridge, CSL SW NW, same section. The Westland Oil Co. was drilling at 650 feet in its No. 1-A Bonner, NW cor. SW, same section.

Southeast of Tulsa the Sac-Fox Oil Co. was spudding its No. 1 Warner, CEL NE SW, Section 33-18-14. The Riverside Oil Co. had a rig up and tools in place for its No. 1 Self, SE cor. NE NE, Section 2-16-12. The Pearson Oil & Gas Co. shut in its No. 1-A Wetstone, NE cor. Section 3-16-12, for 5,000,000 feet of gas in sand at 1,955-62 feet. Winemiller and others made a 120-bbl. well out of their No. 2 Brown, CSL SW SW, Section 18-16-13, with a shot of 120 quarts in sand at 1,029-84 feet.

Okmulgee County

In Okmulgee County, the Pulaski Oil Co. had a 200-bbl. showing in its No. 2 Willis, NW cor. SE SW, Section 22-16-12, six feet in the sand topped at 2,538 feet, and was going to shoot it. The Oklahoma Eastern Oil Co.'s No. 8 Tiger, CSL NW SW, Section 24-16-12, was good for 1,905 bls. from sand at 2,230-33 feet. The Sheridan Oil & Gas Co. shot its No. 2 Willis, SE cor. NW NE, Section 28-16-12, with 10 quarts in sand at 2,062-67 feet and it made 80 bbls. Jackson & Wise gave their No. 2-E King, CSL SW SW, Section 36-16-11, a heavy shot, using 180 quarts in sand at 1,807-32 feet and it produced 10 bbls.

The Cosden Oil & Gas Co. found 5,000,000 feet of gas in its No. 1 Moore, NE cor. SW, Section 14-15-12, in pay sand at 1,851-53 feet. The sand was topped at 1,816 feet. C. F. Noble also had a gasser good for 3,000,000 feet in his No. 1 Adams, NW cor. SW, Section 20-15-12, in sand at 1,055-75 feet. Total depth was at 1,720 feet. His No. 2 Miles, NE cor. SE NW, Section 19-15-12, was a 25-bbl. producer after a shot of 110 quarts in sand at 1,626-85 feet.

New McCray Area

In the new area opened up by W. L. McCray in 13-11, his No. 1 Thompson, SW cor. SE, Section 14-13-11, made 420 bbls. natural from sand at 2,480-88 feet. Rigs were up for two offsets, the Wood Oil Co.'s No. 2 Thompson, SE cor. SW, same section, and the Stebbins Oil Co.'s No. 2 Morgan, NE cor. NW, Section 23-12-11. The Gypsy Oil Co. was moving in material for the third offset in the NW cor. NE, Section 23-13-11. The Kimbley Oil Co. abandoned the rig for its No. 4 Hawkins, NW cor. SE SE, Section 29-13-11, and the Gladys Belle Oil Co. and others' No. 6 Bruner, CEL SE SE, Section 36-13-11, was dry and abandoned at 2,547 feet.

The Acta Oil Co. had a 25-bbl. showing of oil and some gas from sand at 2,792-94 feet. There was sand right above this pay formation at 2,775-90 feet. Salter's No. 7 Kanard, NE cor. SE SW, Section 21-13-12, was a 20-bbl. producer after a 4-quart shot in sand at 2,181-95 feet. Salter and others had a rig on the ground for their No. 8 Kanard, CEL SW SW, same section.

The rig for Parshall's No. 1-A Monday, SW cor. Section 1-12-12, was abandoned, and Steinmeyer reported a failure at 2,750 feet in his No. 18 Holmes, C SW SW, Section 34-12-12. A well good for 130 bbls. natural was brought in by the Mitchell Oil Co. in its No. 4 Randall, CEL SE NW, Section 30-12-12, from sand at 2,397-2,402 feet.

Sivalls and others were drilling deeper in their old well, No. 1 Galloway, SW cor. SE NW, Section 3-11-12, at 2,812 feet. Another old well drilling deeper encountered 9,000,000 feet of gas from sand at 1,978-80 feet and was drilling ahead. It was Charles King's No. 1 Bruner, CEL W half W half SW, Section 11-11-13. Pat Clark and others were drilling their No. 1 Bruner, NW cor. SE, Section 10-11-13, at 1,500 feet. The Southern States Oil Corp. had a rig on the ground for No. 1 Henry, SE cor. Section 20-12-13.

Okfuskee County

In Okfuskee County, the Independent Oil & Gas Co. had 12,000,000 feet of gas from sand at 2,792-2,802 feet in its No. 3 Henins, SW cor. SE NW, Section 13-11-11. It was an old well drilling deeper. The same company's No. 4 Henins, CNL NW SE NW, same section, another old well, was drilling at 2,690 feet. The Carter Oil Co. was likewise deepening its No. 7 Barnett, CEL NW NE, Section 25-11-11, at 2,705 feet.

In McIntosh County, Windham and others were drilling at 500 feet in their No. 1 Smith, CSL NW NW NW, Section 22-12-14, and the Wooster Oil Co. was deepening its No. 3 Stand, C NE NE NE, Section 17-11-14, at 3,510 feet.

Creek County Operations

In Creek County, the Flesher Petroleum Co. spudded and shut down its No. 1 Lasley, SE cor. NW, Section 7-17-8. The Waite Phillips Co. was drilling at 400 feet in its No. 2 Harjo, CSL SE NE, Section 24-17-8, and rigs were up for the Roland Oil Co.'s No. 1 Morrison, SW cor. SE NE, Section 25-17-8, and for the Oklahoma Producing & Refining Co.'s No. 1 NE cor. SE, Section 28-17-8. The Olean Petroleum Co. was rigging up its old well, No. 1-A Yarhola, SE cor. Section 31-17-8, at 2,768 feet to drill deeper, and was spudding its No. 4 Washington, SE cor. SW SW, Section 32-17-8. In the same section, the Page Bros. & Savoy were rigging up to deepen an old well, their No. 1 Washington, SW cor. SE, and had a rig in place for No. 2 Washington, NW cor. SW SE, and the Sartain Brothers were drilling at 700 feet in their No. 1 Antussel, SE cor. SW NW.

Another old well rigging up to drill deeper was the Newblock Oil Co.'s No. 2 Roberts, NW cor. NE, Section 5-16-8. The same company's No. 5 Roberts, SW cor NW NE, same section, was drilling at 350 feet. The Olean Petroleum Co. had a rig on the ground for its No. 3 Wills, NE cor. Section 6-16-8. Clayton Lynch was spudding No. 1 Hawkins, NW cor. SW NW, Section 29-16-8.

The Prairie Oil & Gas Co. had a rig on the ground for its No. 1 Self, C NW SE SE, Section 31-17-9, and the Bu-Vi-Bar Petroleum Co. had a 4,000,000-foot gasser in its No. 1 Roberts, SW cor. NW NW, same section, in sand at 2,698-2,707 feet.

Makes 500-Bbl. Natural

A 500-bbl. natural producer was brought in by G. W. Kinney and others in their No. 2 Morgan, CSL SW NE, Section 15-19-9, from sand at 2,751-58 feet. The Shaffer Oil & Refining Co.'s No. 1 Manley, CSL SE NE SW, Section 15-19-9, made 39 bbls. during the first 24 hours after a shot of five quarts in sand at 2,768-75 feet. The same company was spudding its No. 5 Smith, CNL NW SE, same section, and had a rig in place for No. 6 Smith, CSL NW NW SE, same section. Floyd Howarth was drilling at 600 feet in No. 1, NW cor. NE SW, Section 19-19-9, and the H. F. Wilcox Oil & Gas Co. had a rig up for its No. 1 Taylor, NW cor. NE SW, Section 5-18-9.

The Jomac Oil Co. had a couple of dusters, its No. 1 Tiger, NE cor. SE, Section 6-16-10, being abandoned as dry at 1,040 feet, and its No. 2 Hamilton, SW cor. Section 36-16-9, at 2,926 feet. The same company was drilling at 300 feet in its No. 2 Childers, SE cor. SW SE, Section 9-16-9, and Wolfe and others were spudding their No. 2 Renfrow, SE NE, same section. Simons & McKeehan shut down their No. 1 Mickey, NE cor. SE SE, Section 20-16-9, at 200 feet. The Transcontinental Oil Co.'s old well drilling deeper, No. 3 Detrich, CSL SE NW NW, Section 27-16-9, was bailing at 3,100 feet.

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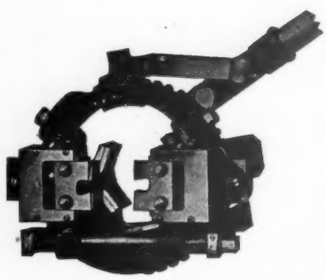

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The Iron Mountain Oil Co. was drilling at 1,475 feet in its No. 1 Carver, jr., SE cor. SW, Section 8-17-11, and the Oklahoma Producers & Refiners Corp. was below 1,600 feet in its No. 1-A Cooper, NE cor. NW, Section 17-17-11.

Duster Abandoned

A duster was abandoned by the Phillips Petroleum Co. in its No. 3 Deer, SE cor. NE NE, Section 32-16-10, at 2,864 feet. Dickerson and others abandoned the rig for their No. 1 Barnett, SW cor. SE, Section 20-16-9 and McKeehan & Simmons were spudding their No. 1 Mickey, NE cor. SE SE, Section 20-16-9.

The Independent Oil & Gas Co.'s No. 1 Tiger, NE cor SW, Section 36-15-7, was shot with 120 quarts in sand at 2,544-60 feet, and was averaging 20 bbls. a day. The 8-inch casing split and was being swedged. The H. F. Wilcox Oil & Gas Co.'s No. 2 Heneka, NW cor. NE, Section 2-15-8, an old well, had 2,000 feet of oil in the hole and was making half a bailer of water an hour from sand at 3,682-87½ feet. The Pure Oil Co.'s No. 4 Yarhola, SE cor. NW NE, Section 17-15-8, produced 350 bbls. in the first 24 hours and was making some water from sand at 3,726-89 feet. It was an old well drilling deeper. The Skelly Oil Co. had a rig on the ground for its No. 1 Beaver, SE cor. SW, Section 20-15-8. A failure was recorded in C. G. Tibbens' No. 1 Marshall, NE cor. NW, Section 21-15-8, which was dry at 2,975 feet. Aaron Cohen also had a duster in his No. 1 Ahlaquan, SE cor. NW SW, Section 9-14-8, at 3,275 feet. The Skelly Oil Co. was rigging up its No. 2 Daniel, SE cor. SW SW, Section 11-14-8, and C. G. Tibbens was drilling at 730 feet in his No. 1, NE cor. SE NE, Section 13-14-8. He was also spudding his No. 7 Johnson, CSL SE SE, Section 26-14-8. The Independent Oil & Gas Co. had a rig on the ground for its No. 10 Beaver, NE cor. NW NE, Section 35-14-8, and the Phillips Petroleum Co. was building a rig for its No. 2 Beaver, NE cor. SE, same section.

A gas sand good for 8,000,000 feet was encountered at 1,210-20 feet in Wood & Farren's No. 1 Jack, CWL NW SW NW, Section 7-14-7, and it was drilling ahead at 1,225 feet.

The Atlantic Oil Producing Co. had a rig on the ground for No. 1 Wolfe, SE cor. NW SE, Section 17-15-9, and H. B. Gutchins was spudding No. 1, NW cor. SW NW, Section 26-15-10. The Carter Oil Co. and others had a rig on the ground for their No. 1 Mayes, NE cor. SE, Section 22-14-9.

The Burke Greis Oil Co. was drilling at 615 feet in No. 1 M. Barnett, SW cor. NE, Section 31-14-10. The Independent Oil & Gas Co.'s No. 1 Barnett (Brown), SE cor. NW NE, same section, was drilling at 720 feet. The production of the Independent's No. 1 Barnett, SE cor. SW NE, same section, the discovery well in this area, averaged 220 bbls. from sand at 3,446-55 feet during the past week, and the water increased from 9 to 17 bailers. Other activities in this section included the same company's No. 2 Barnett, NW cor. SW NE, which was rigging up; and the same company's No. 1 Scott, NW cor. NE SE, which was spudding; the Shaffer Oil & Refining Co.'s No. 1 Scott, NE cor NW SE, was drilling at 275 feet; and the Waite Phillips Co.'s No. 1 Harjo, SE cor. NE NW, had a rig up.

Garfield County

In Garfield County, the Alamo Oil & Gas Co. had a rig up for its No. 8 School Land, C NW NW, Section 36-22-4w. A failure was recorded by Ferlow & the Champlin Refining Co. in their No. 1 Baldwin, SW cor. Section 15-22-3w, at 2,400 feet. The Sinclair Oil & Gas Co. was rigging up its No. 10 Kesner, SW cor. SE NE, Section 19-22-3w, and had a rig in place for No. 15 Campbell, SE cor. NW, Section 30-22-3w. The same company was also drilling at 870 feet in No. 7 Morrison, CWL NW NE, Section 31-22-3w.

In the southern part of the county, the Gens Marie Oil Co. skidded the rig 25 feet east on its No. 1 Anderka, SW cor. NE SW, Section 7-20-6w, and was spudding at 100 feet. Total depth of the old hole was 950 feet.

Northern Lincoln County hopes received another set-back with the abandonment by J. A. Dingwall of his No. 1 Ryan, SW cor. Section 2-16-4, at 4,473 feet.

The Mutual Oil Co. was skidding the rig 50 feet south on its No. 1 Powell, SE cor. NW NW, Section 17-15-3, after carrying the old hole to 1,790 feet. Heinz & Green may go deeper in their No. 1 Norton, SW cor. NW SE, Section 7-14-4, which was shut in for 5,500,000 feet of gas in sand at 3,305-07 feet.

In Woods County, the Victor Oil Co. was spudding its No. 1 Gray, SW cor. SE, Section 10-25-15w, at 50 feet.

CALIFORNIA FIELDS

(Continued from Page 42)

oil. In addition to this completion, the U. S. Royalties has two other wells drilling.

The unusually large initial production of new wells completed at Long Beach during the past week offset to a large extent the decline in the older wells and as a result there was practically no change in the field's production. Neither was there any change in the average daily well production and the average output of 615 bbls. per well established last week remained unchanged W. R. Ramsey carried off the field honors and in addition to bringing in the largest well during the week is credited with the largest completion listed for some time. Ramseys new well, No. B 2-A is located on property leased from the City of Long Beach and, in addition to being a large one, is flowing quite steadily. The big well of the week was drilled to 5,041 feet and finished with a 4¾-inch oil string landed at 5,038 feet. It is listed as a 3,520 bbl. producer and the oil, testing 26.8 degrees and showing a cut of 2 per cent, is flowing through two 1-inch beams under a presure of 300 pounds. Ramsey's No. 1 on this same lease is flowing 500 bbls. a day from the 4,300 foot level and this well, together with No. 3, a driller, will undoubtedly be carried down to the deep zone.

The Pan American Petroleum Co. also completed an unusually large well, No. 3 Anderson and, although it was drilled a little deeper, the initial output was not so large as that of Ramsey's new producer. No. 3 Anderson was finished at 5,080 feet and came in flowing 3,100 bbls. a day of comparatively clean 28.3 gravity oil. It is flowing through a 1½ inch bean under a pressure of 600 pounds. The United Oil Co.'s No. 1 King Tut, while small in comparison with Ramsey's No. 2 and the Pan American's No. 3 Anderson, was much larger than the average completion for the past several weeks. It was drilled to 4,989 feet and finished with a 4½-inch oil string landed on bottom. This new well upon completion started off making 1,500 bbls. but the following day the output gauged 1,982 bbls. of 28.5 gravity oil. It is flowing through a 1⅛-inch bean under a pressure of 200 pounds and although the production has not yet entirely cleaned up it is gradually doing so. The output during the first day showed a cut of 10 per cent, while during the following day the production was only cutting 6 per cent. It is believed that this well, No. 1 King Tut, which is quite favorably located, will clean up shortly and that the production will not settle to any large extent for some time.

The B. C. L. Syndicate's new well, No. 12 A. Herwick, was also bothered with an unusually large cut, but in this instance there has been no improvement to date. No. 12-A Herwick, drilled to 4,854 feet and finished with a 4¾-inch oil string, is making 1,250 bbls. of 20.6 gravity oil, which shows a cut of 11 per cent. It is flowing through a ⅝-inch bean under a pressure of 400 pounds and although there has been no change in the well's production for the first few days it may not clean up for a week or so. In contrast to the completions during the previous week, the wells put on production during the past seven days were quite large and came in producing from the various deep zones. The U. S. Roy

alties Co. completed its drilling program at Long Beach by finishing No. 8 A. Mills as a 1,000-bbl. well. It was drilled to 4,800 feet and the oil, which tests 22.8 degrees and shows a cut of 1 per cent, is flowing through a 7/8-inch bean under a pressure of 150 pounds.

Walter H. Fisher finished the deepest well put on production and was rewarded with a 1,750-bbl. well producing 28.3 gravity oil. His record well, No. 6, was carried down to 5,230 feet and finished with a 4½-inch oil string landed at 5,200 feet. It is flowing through a 1-inch bean under a pressure of 450 pounds and the oil, which showed a cut of 6 per cent upon completion, had cleaned up very nicely the following day. The cut in this case is mud, undoubtedly deposited in the hole while it was being drilled and for this reason it will probably disappear within the next day or two.

The Shell Oil Co. increased its daily production 1,490 bbls. as the result of the completion of No. 2 Stratton, No. 2 Nesa and No. 1 Mills. The company finished No. 2 Stratton at 4,947 feet and the output, testing 27.5 degrees and showing a cut of 1½ per cent, is flowing through a 1-inch bean under a pressure of 350 pounds. No. 2 Nesa, a recompletion after being redrilled and deepened, was brought in from 4,875 feet, while No. 1 Mills, the first producer on this lease, was drilled to 4,601 feet. The former registered an initial production of 500 bbls. of clean 24.5 gravity oil, while the latter made 150 bbls. of 22.8 gravity oil which showed a cut of 1 per cent. The last well put on production was the Laddie Boy Oil Co.'s No. 2, which was finished at 3,885 feet and brought in doing 360 bbls. a day of 25.4 gravity oil.

Santa Fe Springs

Both the number of completions and the average daily well production showed declines at Santa Fe Springs during the past several days and very little change is expected during the coming week. The most interesting completion was the Union Oil Co.'s No. 25 Bell, which was finished in the Foix zone at 3,526 feet. No. 25 Bell, which was brought in flowing through a ½-inch bean under a pressure of 300 pounds, produced 472 bbls. during the first 24 hours. The oil shows a cut of 5 per cent but it is believed that it will be substantially reduced after the well has flowed for a few days. The Bandini Petroleum Co. finished its fourth and last well at Santa Fe Springs by bringing in No. 3 Off after drilling it to 4,650 feet. The result was only a small well flowing 300 bbls. a day and the oil, which tests 30.2 degree, shows a cut of 10 per cent. It is flowing through a 1-inch bean under a pressure of 100 pounds. The Associated Oil Co. placed two wells on production, No. 4 Dallugge and No. 6 Dallugge. The former had sanded up and when turned loose during the early part of the week made 318 bbls. No. 6 Dallugge was a new well finished at 4,659 feet. It was only capable of pumping about 50 bbls. daily and was somewhat of a disappointment.

Huntington Beach

There were only two new wells finished at Huntington Beach during the past week, although the Standard and Associated Oil Cos. started four new ones. The former spudded in No. 23 on Lease A and Nos. 24 and 25 on Lease B, while the latter is completing the rig being erected on the Wardlow lease. The Standard Oil Co. is running the largest number of strings in the field and should continue to do so for some time. This company, through purchase and lease, holds the largest amount of productive territory and, while the wells in the future will probably be small, there is room for a great number of shallow producers. With higher prices these wells, which can be completed between 2,500 and 3,000 feet, should prove quite profitable.

The largest of the new wells completed during the past week was the Central Oil Co.'s No. 3 Cox. It was drilled to 3,412 feet and finished with a 6¼-inch oil string landed at 3,410 feet. On the beam it is pumping 132 bbls. of 22.3 gravity oil, which is cutting 1 per cent water and 4 per cent mud. The Shell Oil Co. was not as successful as the Central and its No. 7 Ashton, brought in from 4,962 feet, is only capable of pumping 16 bbls. of 22.1 gravity oil per day. The Shell's first well on this lease, No. 1 Ashton, has proven one of the best in the field. It was a good well upon its completion two years or so ago and it is still producing over 1,100 bbls. a day.

The best well in the field was the Standard Oil Co.'s discovery well, No. 1 Bolsa Chica, which was brought in from 2,550 feet. It is producing 850 bbls. a day at the present time and, although water has begun to show in the output, it can be deepened for smaller but clean production.

Miscellaneous Drilling

The Standard Oil Co.'s Anaheim wildcat, No. 1 Wagner, is beginning to look quite doubtful and, although the territory in which it is being drilled has never been considered very favorable, there is always a possibility of picking up a sand, despite the fact that it has been condemned. The Standard's test shows over 3,800 feet of hole and the company has not even reported a surface showing. The Marland's test, drilling in the general vicinity, is reported to have shown a few colors in the ditch and, while this is quite favorable, in view of the fact that the Standard has passed the 3,800-foot level, the prospect of securing production is not very promising.

The Pan Americans' El Segundo wildcat, No. 1 Pacific Southwest, is still held up with a fishing job and this test, which operators have been watching very closely because of a reported oil showing, is still in a bad mechanical condition. Three of the Standard Oil Co.'s wildcats, drilling a few miles farther east and to the north, are not yet deep enough to pick up the pay but they are being watched closely.

Many operating companies have experienced considerable difficulty in opening up the wells which have been idle for a year or so and in a few cases it has been practically impossible to keep them cleaned out. Some 25 or 30 of them which were opened up two weeks ago have since sanded up and it will probably be four or five months until the larger part of these wells have been returned to normalcy. In the Hovey Hills, the Kendon Petroleum Co. completed its well No. 1 at 2,601 feet with an initial daily output of 200 bbls. after a very successful drilling job.

Field Operations

Oil field operations reported to the State Oil and Gas Supervisor show 23 new wells started, as compared with 24 during the previous week, a total for the current year to date of 292, as compared with 304 at the same date last year. Of the 23 notices to drill filed this week, eight were for new wells in the Torrance Field, one in the Santa Fe Springs Field, one in the Long Beach Field, one in the Montebello Field, three in Dominguez Field, five in the fields of Kern County and four at various other points. Permits were issued for the following new wells:

Torrance

Location, Company, Well—
23-4-14 Chicksan Oil Co. 2.
Fullerton Oil Co.—
9-4-14 Lenz 2.
23-4-14 J. F. McMahon 2.
15-4-14 Pet. Securities Co. 22.
Sentinel Oil Co.—
24-4-14 Joughin 5.
Shell Co.—
23-4-14 Kettler 8.
10-4-14 United States Royalties Co. 16-A.
10-4-14 United States Royalties Co. 17.

Dominguez

General Pet. Corp.—
28-3-13 White 2.
Union Oil Co.—
28-3-13 Hellman 3.
20-3-13 United States Royalties Co. 23.

Santa Fe Springs

General Pet. Corp.—
5-3-11 Anderson 53-B.

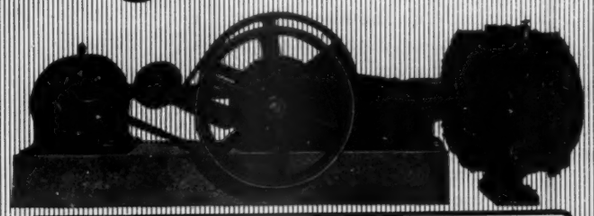
Long Beach

Shell Co.—
29-4-12 Goddard 5.

Midway-Sunset

31-32-24 Berry & Ewing 16.
C. J. Berry—
24-12-24 Hillside 25.
18-11-23 General Pet. Corp. 7-B.
18-11-23 General Pet. Corp. 11-A.
15-32-24 Pacific Oil Co. 51.

VACUUM PUMPS



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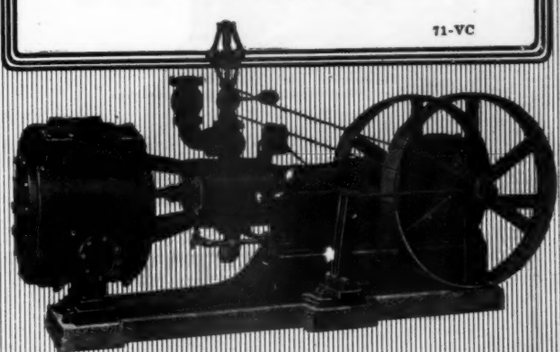

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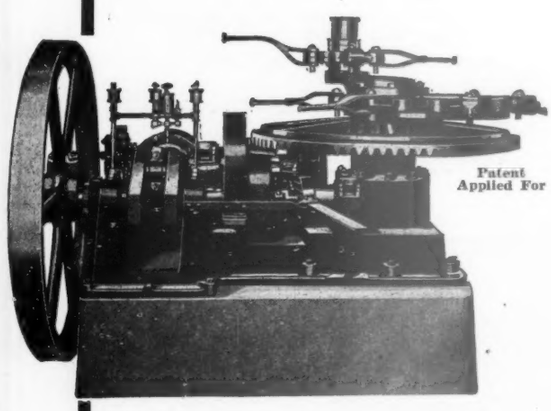

Patent Applied For

"PATTIN POWER"

REFINERY STATISTICS FOR JANUARY, 1924

Compiled by W. C. Hill, Petroleum Economist, U. S. Bureau of Mines

Gasoline production during January attained a new high record of 695,322,500 gallons, a daily average of 22,429,758 gallons, which shows an increase in the daily average over that of the preceding month amounting to 1,165,997 gallons, or 5.5 per cent, and an increase of 11.5 per cent over the rate a year ago. Imports during January were 19,309,197 gallons, a decrease of approximately 6,000,000 gallons from the December imports. The new supply (production plus imports) was 714,631,697 gallons, a daily average of 23,052,635 gallons, and an increase of 12.1 per cent over last year's figures.

The indicated domestic demand in January was 498,160,950 gallons, a decrease of about 20,000,000 gallons from the December figure and a daily average of 16,069,708 gallons. January exports were 88,823,007 gallons, an increase over December exports of about 12,700,000 gallons. The total demand (domestic demand plus exports) was 586,983,957 gallons, a decrease of about 8,000,000 gallons, or 1.25 per cent from the December figure, but an increase of 13.2 per cent over the figures for January a year ago. The daily rate of demand was 18,934,966 gallons.

Gasoline stocks on January 31 were 1,202,547,390 gallons, an increase of 127,647,740 gallons during the month which represents the excess of supply over demand during this period. This increase in stocks compares with the increase of about 110,000,000 gallons during January, 1923.

Comparing these figures for January, 1924, with those of January, 1923, the current figures show: (1) an increase of 12.1 per cent in the new supply, (2) an increase of 13.2 per cent in the total demand, and (3) an increase of 19.9 per cent in refinery stocks.

The output of kerosene in January was 217,767,931 gallons, a decrease of about 17,000,000 gallons from the December production. Exports decreased about 6,500,000 gallons, amounting to 64,762,389 gallons. The domestic demand increased slightly to 122,040,280 gallons and about 31,000,000 gallons were added to stocks which amounted to 314,181,465 gallons the end of January.

The production of gas and fuel oils was 1,062,892,393 gallons, a slight decrease from the December output. Imports declined over 7,000,000 gallons amounting to 36,471,249 gallons. Exports were 109,908,000 gallons, a decrease of 40,000,000 gallons from the December figures. The domestic demand was 977,143,731 gallons, an increase of about 25,000,000 gallons over the December demand. About 12,000,000 gallons were added to stocks which were 1,527,346,622 gallons the end of the month.

Lubricants showed a slight decrease in production in January the output amounting to 94,534,650 gallons. Exports were 25,175,405 gallons, a decrease of 8,000,000 gallons from December exports. Domestic demand was 67,391,215 gallons, an increase of 14,000,000 gallons or 26.9 per cent over figures for the preceding month. Stocks of lubricants were 244,755,997 gallons, an increase of 2,000,000 gallons during the month.

There were 247 refineries reported to the Bureau of Mines as operating during January at 77.2 per cent of their aggregate daily crude oil capacity of 2,142,222 barrels, running to stills a daily average of 1,653,025 barrels of both foreign and domestic crude oils. This was almost exactly the same rate of operations as in December but an increase of 9.4 per cent as compared with operations a year ago.

RUNS TO STILLS AND OUTPUT OF REFINERIES IN THE UNITED STATES, JANUARY, 1924

Oils run to stills, bbls.:	Crude Oils Dom.	Crude Oils For.	Unfinished Oils Dom. (net)	Unfinished Oils For.	Nat. Gas Gasoline	Ttl. oil run to Stills
East Coast	9,436,826	1,533,344	308,362	267,605	193,997	11,739,134
Pennsylvania	1,718,991	.....	42,282	.....	17,593	1,778,866
Indiana and Illinois	4,811,101	.....	139,485	.....	66,481	5,017,067
Oklahoma and Kansas	6,117,469	.....	.....	.....	144,470	6,261,939
Texas	8,291,970	1,145,178	.....	17,362	121,838	9,576,348
*Texas, Gulf Coast	5,994,177	1,145,178	.....	17,362	99,973	7,256,690
Louisiana and Arkansas	3,256,413	.....	53,190	30,266	.....	4,176,229
*La. and Ark., Gulf C	2,419,822	836,360	.....	53,190	.....	3,309,372
Colorado & Wyoming	2,148,983	.....	502,017	.....	42,485	2,693,485
California	11,947,148	.....	.....	.....	129,648	12,076,796
Total United States.	47,728,890	3,514,882	†687,027	338,157	736,778	$53,005,734
Daily Av., Jan., '24.	1,539,642	113,383	22,162	10,908	23,767	1,709,862
Daily Av., Jan., '23.	1,376,930	133,549	14,235	16,866	20,830	1,562,410

Output and losses:	Gasoline (gal.)	Kerosene (gal.)	Gas and Fuel Oils (gal.)	Lubricants (gal.)	Wax (lbs.)
East Coast	137,503,240	51,020,643	238,252,560	25,156,109	17,225,345
Pennsylvania	26,240,973	11,574,081	15,615,053	13,822,393	7,041,560
Indiana and Illinois	95,939,159	23,577,640	61,179,769	10,266,231	4,381,998
Oklahoma and Kansas	109,238,932	26,095,981	106,804,959	6,737,227	4,272,140
Texas	113,814,960	47,510,464	179,922,365	26,432,737	4,609,417
*Texas, Gulf Coast	84,408,652	39,121,024	128,945,979	24,454,326	4,573,337
Louisiana and Arkansas	45,759,953	26,367,698	80,838,294	2,648,944	4,024,461
*La. and Ark., Gulf Coast	38,774,484	22,772,555	57,009,432	2,455,492	4,024,461
Colorado and Wyoming	51,495,049	6,744,347	46,214,549	1,080,545	921,466
California	115,330,234	24,877,077	334,064,844	9,390,565	36,514
Total United States.	695,322,500	217,767,931	1,062,892,393	94,534,650	42,522,461
Daily Av., Jan., '24.	22,429,758	7,024,772	34,286,851	3,049,505	1,371,725
Daily Av., Jan., '23.	20,123,333	6,853,158	31,915,358	2,808,963	1,273,223

	Coke (tons)	Asphalt (tons)	Other Fin. Prod. (gal.)	Net Unfin. Prod. (gal.)	Losses (bbls.)
East Coast	14,088	53,079	2,443,788	.....	490,640
Pennsylvania	1,169	144	1,096,900	.....	114,031
Indiana and Illinois	19,716	14,971	5,856,968	.....	114,439
Oklahoma and Kansas	4,321	.....	1,718,775	1,312,122	321,203
Texas	10,556	22,903	3,320,814	9,608,976	350,859
*Texas, Gulf Coast	10,556	22,903	3,142,398	5,200,503	277,424
Louisiana and Arkansas	8,209	18,664	10,338,783	322,392	57,232
*Louisiana and Ark., Gulf Coast	8,209	18,664	6,139,554	3,486,798	39,554
Colorado and Wyoming	5,953	452	2,784,862	.....	69,151
California	.....	37,183	5,366,243	1,571,518	139,611
Total United States	64,012	147,396	32,927,133	†	1,469,473
Daily average, January, 1924	2,065	4,755	1,062,166		47,403
Daily average, January, 1923	1,878	4,406	270,552		

*Gulf Coast figures are included with totals shown for States named above. †Net excess of unfinished oils run to stills over production balancing out the latter and reducing the total oils run to stills by that amount. ‡Net grand total.

STOCKS AT REFINERIES IN THE UNITED STATES, JANUARY 31, 1924

Oils to be run to stills, bbls.:	Crude Oils Domestic	Crude Oils Foreign	Unfinished Oils Domestic	Unfinished Oils Foreign	Total Oils to be Run to Stills
East Coast	6,132,192	1,764,698	4,267,841	141,035	12,305,764
Pennsylvania	1,217,909	.....	706,709	.....	1,924,618
Indiana and Illinois	1,201,605	.....	2,526,735	.....	3,728,340
Oklahoma and Kansas	5,130,835	.....	1,372,040	.....	6,502,875
Texas	4,758,359	579,730	3,763,878	464,787	9,566,754
*Texas, Gulf Coast	4,022,867	579,730	3,089,665	462,935	8,155,197
Louisiana and Arkansas	4,609,326	1,332,555	853,502	141,576	6,936,959
*La. and Ark., Gulf Coast	4,310,421	1,332,425	809,518	141,576	6,593,940
Colorado and Wyoming	1,075,515	.....	1,744,370	.....	2,819,885
California	6,070,057	.....	12,113,523	.....	18,183,580
Total United States	30,195,798	3,676,983	27,348,598	747,395	61,968,777
U. S. total, Jan. 31, '23	19,639,779	10,274,137	22,981,528	121,047	53,016,491

Products:	Gasoline (gal.)	Kerosene (gal.)	Gas and Fuel Oils (gal.)	Lubricants (gal.)	Wax (lbs.)
East Coast	390,122,853	79,912,850	246,202,918	102,516,544	55,276,170
Pennsylvania	29,213,019	12,798,665	32,773,180	27,759,995	17,202,753
Ind. and Illinois	157,041,754	39,163,477	46,189,602	22,072,844	26,326,294
Okla. and Kansas	148,351,593	16,345,921	88,826,457	12,847,075	3,255,281
Texas	146,517,661	67,367,959	324,711,243	54,041,905	7,771,157
*Texas, Gulf Coast	128,359,137	64,320,457	279,830,293	53,613,636	7,691,860
La. and Ark.	113,043,941	66,289,732	102,951,310	5,382,661	34,289,340
*La.-Ark., Gulf Coast	110,010,924	65,468,361	97,694,173	5,048,131	34,289,340

Colo. and Wyoming.	110,781,286	3,966,014	24,632,587	5,815,003	2,276,146
California	207,484,283	28,336,847	661,009,325	14,319,970	173,383
Total U. S.	1,202,556,390	314,181,465	1,527,346,622	244,755,997	147,617,015
Total U. S. Jan. 31, 1923	1,002,857,273	275,436,804	1,265,074,722	240,689,649	195,705,023

	Coke (tons)	Asphalt (tons)	Other Fin. Prod. (gal.)
East Coast	7,587	61,831	4,306,264
Pennsylvania	163	2,929	3,617,879
Indiana and Illinois	6,622	9,159	18,772,777
Oklahoma and Kansas	3,930	230	8,190,114
Texas	618	13,057	4,001,594
*Texas, Gulf Coast	618	13,057	3,676,888
Louisiana and Arkansas	760	15,129	11,014,817
*Louisiana and Arkansas, Gulf Coast	520	15,129	1,709,675
Colorado and Wyoming	6,638	3,418	2,306,845
California	.....	13,547	124,519
Total United States	26,318	119,300	52,334,809
Total United States, January 31, 1923	29,625	123,779	21,033,065

*Gulf Coast figures are included with totals shown for States named above.

	Production	*Imports	*Exports	Stocks End of Period	Dom. Demand
Gasoline—					
January, '23	623,723,337	13,938,707	61,630,469	1,002,857,273	456,967,163
October	659,060,570	23,484,550	87,204,601	946,872,683	621,172,668
November	617,558,021	13,423,861	54,499,383	985,046,373	538,308,809
December	659,168,606	25,100,103	76,110,312	1,074,899,550	518,305,120
January, '24	695,322,500	19,309,197	88,823,007	1,202,547,390	498,180,950
Kerosene—					
January, '23	212,447,902	31,390	94,860,128	275,436,804	123,232,692
October	191,346,325	16,380	79,864,581	224,954,009	124,568,127
November	220,811,390	10,016	74,377,197	239,114,396	132,283,823
December	234,921,498	80	71,172,875	283,195,667	119,667,431
January, '24	217,767,931	20,536	64,762,389	314,181,465	122,040,280
Gas and Fuel Oils—					
January, '23	989,376,102	96,888,120	97,199,839	1,265,074,722	1,028,717,611
October	1,069,800,191	32,001,109	131,099,321	1,436,591,014	1,015,314,958
November	1,057,931,617	31,487,208	167,440,199	1,499,925,521	918,644,119
December	1,073,337,053	43,828,202	149,725,898	1,515,034,711	952,330,167
January, '24	1,062,892,393	36,471,249	109,908,000	1,527,346,622	977,143,731
Lubricants—					
January, '23	87,077,868	21,245	32,433,734	240,689,649	49,710,517
October	88,003,033	2,032	25,590,031	218,485,258	58,942,955
November	96,120,347	176	22,296,571	231,335,328	60,973,882
December	97,747,685	2,972	33,185,748	242,785,070	53,116,167
January, '24	94,534,650	2,897	25,175,405	244,755,997	67,391,215

*From Bureau of Foreign and Domestic Commerce. Exports include shipments to Alaska, Hawaii, and Porto Rico.

EASTERN PIPE LINE REPORT FOR FEBRUARY

Receipts of crude petroleum during the month of February from the wells by the pipe lines of the Eastern division, which make regular monthly reports of their runs, were 1,972,676 bbls. The daily average receipts aggregated 68,023 bbls. This is an increase of 30,901 bbls. in the total and a gain of 5,385 bbls. in the daily average when the figures are compared with those for the previous month, January. The daily average receipts were 3,070 bbls. less than they were during February, 1923. All of the pipe lines included in this report showed increases in the amount of their runs with the exception of the South West Pennsylvania Pipe Lines, the Macksburg and Cleveland divisions of the Buckeye Pipe Line Co., the Cumberland Pipe Line Co., the New York Transit Co., Tide Water Pipe Co., Pure Oil Co., Emery Pipe Line Co. and the Pittsburgh Pipe Line Co.

The receipts of crude oil from the Illinois Field during the month of February amounted to 535,491 bbls. as reported by the Tide Water Pipe Co. and the Illinois Pipe Line Co. The daily average of these receipts amounted to 18,431 bbls. This is an increase of 1,306 bbls. in the total and a gain of 2,517 bbls. in the daily average when compared with the figures for the longer month of January.

Total deliveries by these two companies in the Illinois Field during the month of February were 353,613 bbls. and the daily average was 12,190 bbls. This is an increase of 71,072 bbls. in the total and a gain of 3,132 bbls. in the daily average compared with January. The total is 28,954 bbls. smaller than the total for the month of February, 1923.

Total deliveries of crude oil by the Eastern lines during February aggregated 4,313,217 bbls. and the daily average was 148,732 bbls. This is a decrease of 197,844 bbls. in the total and a gain of 3,214 bbls. in the daily average compared with the January figures. The daily average is 15,487 bbls. smaller than the February, 1923, daily average.

The amount of crude oil held in storage at the close of February by the various pipe lines which comprise this report amount to 11,844,068 bbls., which is a decrease of 1,063,134 bbls. during the month of February. This is the largest decrease recorded during the present movement and the total compares with a high mark of 17,009,293 bbls. recorded at the close of February, 1922.

There was an increase of 20,454 bbls. in the amount of Lima oil held in storage by these pipe lines during the month. Decreases were recorded in all the other grades as follows: Pennsylvania, 90,676 bbls.; Kentucky, 156,686 bbls.; Mid-Continent, 673,534 bbls., and Illinois, 162,692 bbls.

Late Fields

(Continued from Page 141)

1,300 feet. Barnhart and others' No. 1, on Survey No. 1264, is drilling at 365 feet.

The production for the first 10 days of March in the Rockdale-Minerca shallow sand district, Milam County, averaged 561 bbls. per day. The Milam Pipe Line Co. shipped an average of 300 bbls. per day to the plant of the Rio Grande Refining Co. at El Paso.

In the Goose Creek Pool in the coastal region, the Gulf Production Co.'s No. 11 Paddock is a 35-bbl. pumper at 2,600 feet. The Humble Oil & Refining Co. abandoned No. 36 Peninsula at 2,465 feet.

The Lake View Oil Co.'s No. 3 Minor at Sour Lake is pumping 20 bbls. at 2,140 feet.

MEXICO

TAMPICO, Mexico, March 15.—Mexican Gulf Oil Co. has scored another big producer in Lot 1, Cacalilao secton of the Panuco Field, its No. 49, fraction 4-C, there being good for 20,000 bbls. at 1,926 feet. It's No. 41, same, is also a completion at 1,898 feet, rated good for 1,050 bbls. A shallow well in fraction 4-B is Rich Mex Oil Co.'s No. 63, which is good for 3,000 bbls. at 1,642 feet.

The latest report from Kern Mex Oil Fields' No. 7 La Palma which has already been commented on, shows the well to be good for say, at least 4,000 bbls. This will stimulate drilling in this La Palma district, the territory being divided between Kern Mex Oil Fields and the Mexican Gulf Oil Co., the latter having taken over a lot of acreage from Buckley interests. Mexican Gulf will probably immediately institute an extensive drilling campaign now. It is rigging at this time for its No. 4 there. Kern Mex Oil Fields will also commence on a larger scale.

In short, the northern field, (i. e. the heavy oil district), is day by day becoming—as, in fact, it has been the past few months—the mainstay of Mexico petrolifically considered.

One moment's study of this illustration may give you new standing valve efficiency for all time

The Roark Standing Valve illustrated above offers such important advantages that it takes but a moment's consideration to understand them. In studying the illustration, please take particular note of these points:

The Roark takes up **no** space in the working barrel. This permits a longer stroke, and makes possible a ball and seat **larger** in diameter than the barrel.

Because the principle of a suction valve larger than the discharge valve is scientifically correct, there is no reduction in the gravity of the crude such as is present when the fluid is forced at high speed through smaller suction valves. **The Roark Valve tends to prevent formation of B.S.**

There are **no** leather **rings** on the Roark Standing Valve to become loose and leaky.

There is **no** chance of injury to the ball and seat—the heavy perforated plate (which also keeps the ball in place) protects it.

With the California type ball and seat furnished with the Roark, there is **no** pounding of the seat regardless of speed.

The Roark Standing Valve offers longer life, greater capacity, less upkeep and far less trouble. It is made to fit Bradford, National, Hough and other working barrels. It will pay you to investigate it.

May we send you further details, with prices?

112

Texas Oil Pump Co

Waco, Texas

ARMSTRONG

—NO. 50 ALL STEEL TRACTION—

OIL WELL DRILL

Experienced Oil Well Operators will appreciate the many special features of this wonderful drilling machine—the greatest improvement in drilling machines in fifty years:

ALL STEEL: No wood to rot, burn, break, shrink, or wear out. No screws, nuts, nor bolts—it is built like a steel bridge, every part hot riveted in place. It cannot warp, nor twist, cannot get out of shape nor throw the shafting out of alignment. CAPACITY, 1,000 feet; weight of tools, 2,200 lbs.; POWER, 22½ H. P.—4-cylinder; 4-cycle gasoline engine. BAND WHEEL CLUTCH guaranteed against breakage from any cause during life of machine. REVERSING TRANSMISSION enables operator to reverse band wheel or any shaft in the machine at will. Makes power more flexible than a steam engine. WIRE LINE DERRICK uses steel cable with saving of 75% of cable cost. CALF REEL works independently, always ready. Pulls 6,000 lbs. casing on single line or 35,000 lbs. with triple casing blocks.

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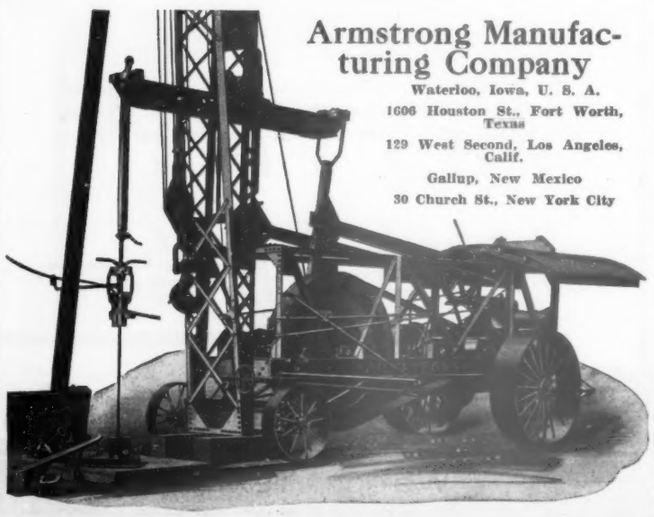

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Teapot Receivership; Mammoth Co. Given 30 Days to Answer

CASPER, Wyo., March 15.—The general opinion here among the oil men is that Harry F. Sinclair won a victory at Cheyenne in the first trial over the Teapot Dome lease. It was feared the Government would try to shut down all operations and stop production entirely, or at least take the whole matter out of the control of the Sinclair interests.

As it turned out, the whole state of affairs now is merely a switch from one department of the Government to another. Under the former system of operation, the Bureau of Mines office at Casper, with experienced oil experts in charge, had direct supervision of the Mammoth Oil Co. on the Teapot Dome, but now with Admiral Strauss in charge for the Federal Court, the Teapot Dome will have to rely for its direction on the words of A. E. Watts, the other receiver appointed with Admiral Strauss, who is only one of the two with experience in the operation of an oil field.

Mr. Watts as vice president of the Sinclair Consolidated Oil Corp. is an experienced oil operator and well qualified to handle the Teapot in the best interests of all concerned. He has shown good executive ability with the Sinclair and his knowledge of oil production will enable him to keep the receivership from a smash that might occur with inexperienced men in charge. None of the operators has ventured any opinion as to the qualifications of Admiral Strauss.

The original draft of the plea of the Government counsel for the injunction was changed considerably at the conference before the court session. Instead of including the tanks and pipe line equipment of the Sinclair Pipe Line Co. and the Sinclair Crude Oil Purchasing Co. located on the Teapot Dome, all property of these firms was eliminated from the amended petition and the Mammoth Oil Co. made the sole defendant. Then a special citation was made in the amended petition regarding two tracts that are in litigation and in this exception, these tracts in litigation will be held as separate entities and the funds derived from same, impounded under a separate clause until a settlement of these claims is reached.

Proceedings in Court

When the court opened with Judge T. Blake Kennedy presiding, many lawyers were present from other cities to obtain a first-hand report of the proceedings for the oil firms they represented. Among the many attorneys present. were John B. Barnes, jr., and A. C. Campbell of the Midwest Refining Co.; H. L. Walls for the Mutual Oil Co.; Wilfred O'Leary for the Western States Oil & Land Co.; Herbert Lacy for the Mammoth; R. N. Matson for the Consolidated Royalty Oil Co.; H. H. Schwartz for the Western Exploration Oil Co. and the Empire interests; A. M. Gee for the Ohio Oil Co, and Bonfils and Stack; George E. Brimmer for the Kasoming, Bair and Prairie interests; Robert Hawley for the Union Oil Co.; R. B. West for the Bear Creek Oil Co.; Thomas O'Donnell for the Marine Oil Co.; and Kincaid & Ellery for the Blackstone Petroleum Co.

In the Sinclair party were Harry F. Sinclair, W. D. Connely, general manager of the Mammoth Oil Co. at Casper; Martin Littleton, attorney of New York; Edwin H. Chandler, attorney of Tulsa, Okla.; Col. J. W. Zeveley and Gratton T. Stanford, personal counsel for Mr. Sinclair; I W Garrett of the Sinclair Pipe Line Co. with Tulsa headquarters, and A. E. Watts, vice president of the Sinclair Consolidated Oil Co. Lacy & Lacy, a prominent firm of attorneys at Cheyenne, were retained as local counsel for the Sinclair interests.

The Government was represented by Atlee Pomerene and Owen J. Roberts and the local prosecuting attorney of the Federal Court here, A. D. Walton, assisted.

Regarding Teapot, M. Sinclair said and others with him concurred in the statement, that the Teapot Dome would be worthless if the Government wins. Asked about the allegations appearing in the press, Mr. Sinclair replied that the whole thing was a matter of politics "and dirty politics too."

"If the Teapot operation is shut down, it will be drained by outside leases of what little oil there is there," he said. He went on to say that this trial was not the Sinclair organization's fight in itself, but that it involves the whole oil business of the country and that if the Government wins this case, no oil operator in the country who has a lease on Government land may expect to have a title to same that he can be protected under.

Injunction Granted

Owen J. Roberts, Government counsel, asked for an injunction restraining the Mammoth Oil Co. from further operation of the Teapot Dome and the appointment of a receiver to handle the operations until a decision be reached through the courts.

Attorney Thomas O'Donnell of Denver, representing the Champion and Taylor interests, asked that the court recognize the right of Champion and Taylor to become co-defendents with the Mammoth Oil Co. The Government attorneys objected and the Court refused. Champion and Taylor claim the southeast quarter of Section 20-33-78 under a placer claim from early operators in the Teapot area and leased this quarter to the Mutual Oil Co. but were forcibly evicted by a force of Marines while drilling.

After the disposal of the Champion and Taylor matter, the Mammoth Oil Co. through Herbert Lacy, made the statement that it would neither object nor approve of any action by the Court towards granting a temporary injunction against the Mammoth Oil Co. and the appointment of a receiver; but in case the Court decided to grant the Government's plea, the Mammoth asked that it be allowed to name one receiver of two to serve instead of one, as the Government asked for.

The Court granted this plea of the Mammoth's attorney and allowed a temporary injunction with 30 days for the Mammoth Oil Co. to file an answer. The Court further fixed the bond of the receivers at $50.000 and uppointed Rear Admiral Joseph Strauss, an active officer of the Navy, to represent the Government and A. E. Watts, vice president of the Sinclair Consolidated Oil Co. as the receiver for the Mammoth and Sinclair interests.

Under this decision, the Teapot Dome will be operated as the two receivers see fit, and if they disagree as to its operation, the Court has reserved the power to appoint a third receiver. The receivers will serve without salary or recompense except such expenses as would arise from their work.

The Government lawyers left Cheyenne immediately for the Pacific Coast where they wyill ask for a similar injunction on the Naval Reserves in California.

DR. MANNING WILL ENTER NEW FIELD OF ACTIVITY

Dr. Van H. Manning has resigned as director of research of the American Petroleum Institute to accept a position with the Pan American Petroleum & Transport Co. Dr. Manning has been associated with the Institute since its early days. Previous to this association he had been for many years Director of the U. S. Bureau of Mines. His work in this capacity and later in organizing and developing the work of research in connection with the Institute are evidence of his abilities in this direction. He is recognized as one of the leaders in the movement for fundamental research in the oil industry, and he is expected to devote considerable attention to problems of this character in addition to his present activities.

RECEIPTS OF CALIFORNIA OIL AND IMPORTS OF PETROLEUM

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the month of February totaled 5,646,000 barrels, a daily average of 194,000 barrels, compared with 5,547,000 barrels, a daily average of 178,935 barrels for the month of January.

Receipts at Atlantic and Gulf Coast ports for the week ended March 8, totaled 1,127,000 barrels, a daily average of 161,000 barrels, against 1,356,000 barrels, a daily average of 193,714 barrels for the week ended March 1.

	Total Mo. of Feb.	Total Mo. of Jan.	Week Ended Mar. 8
At Atlantic Coast Ports:			
Baltimore	426,000	456,000	94,000
Boston	145,000	77,000	77,000
New York	3,447,000*	3,156,000	510,000
Philadelphia ...	833,000	730,000	303,000
Others	145,000	413,000	143,000
Total	5,006,000	4,832,000	1,127,000
Daily av.....	172,621	155,870	161,000
At Gulf Coast Ports:			
New Orleans and Baton Rouge..	640,000	715,000	.....
Daily av.....	22,069	23,065	.....
Total Atlantic and Gulf Coast Ports	6,646,000	5,547,000	1,127,000
Daily av.....	194,690	178,935	161,000

*Revised.

Imports of crude and refined oils at the principal ports for the month of February totaled 7,922,000 barrels, a daily average of 273,172 barrels, compared with 6,715,000 barrels, a daily average of 216,613 barrels for the month of January.

Imports at the principal United States ports for the week ended March 8, totaled 1,959,000 barrels, a daily average of 279,857 barrels, compared with 2,458,000 barrels, a daily average of 351,143 barrels for the week ended March 1.

	Total Mo. of Feb.	Total Mo. of Jan.	Week Ended Mar. 8
At Atlantic Coast Ports:			
Baltimore	604,000	443,000	136,000
Boston	703,000	441,000	65,000
New York	891,000	1,064,000	228,000
Philadelphia ...	411,000	394,000	141,000
Others	1,197,000	1,022,000	113,000
Total	3,806,000	3,364,000	683,000
Daily av.....	131,241	108,516	97,571
At Gulf Coast Ports:			
Galveston dist..	1,520,000	1,692,000	585,000
New Orleans and Baton Rouge..	1,689,000	971,000	400,000
Port Arthur and Sabine district.	761,000	569,000	206,000
Tampa	146,000	119,000	85,000
Total	4,116,000	3,351,000	1,276,000
Daily av.....	141,931	108,097	182,286
At All U. S. Ports:			
Total	7,922,000	6,715,000	1,959,000
Daily av.....	273,172	216,613	279,857

GROUP 3 MARKET SLOW BUT CONTINUES STEADY

(Continued from Page 22)

the 60-62 market. Prices on this grade are no lower than they were a week ago and a couple of regular buyers said they were compelled to pay ¼ cent more. There is practically no demand for the 68-70 grades and it is available within ¼ to ½ cent of the 64-66 grades. There is no special demand for naphtha but, as usual, little distress material is available. A few blenders with empty storage have taken advantage of the situation to fill their tanks.

Kerosene and Distillates

There was no improvement in the kerosene and distillate situation. Kerosenes are off ¼ cent with very few inquiries. Jobbers seem to have plenty of distillate and stocks are accumulating at the refineries. It is doubtful if the domestic demand for kerosene which will undoubtedly improve a little within a month, will be of sufficient quantity to prevent a further price slump. It is predicted by many buyers that prices will continue to slump until low enough to attract export buyers.

Fuel and Gas Oils

Both fuel and gas oils continue weak. With the spot market from 10 to 25 cents below the contract basis refiners are shipping out maximum amounts on the latter. There are no large amounts available in Group 3 but in the few sales that are made a weak price situation is indicated. The Frisco railroad continues to buy on its lines at a price of $1.10.

Natural Gasolines

The weakness in natural gasolines has been especially apparent since the first of the week. Manufacturers who a week ago got rid of some distress shipments are now needing further relief. Purchases of Grade A over April have been made in the distress cases the buyer for immediate shipment practically sets his own price.

The demand for cylinder stocks is strong. One concern during the past three weeks sold 100 cars. The company advanced its prices with each order and had no difficulty disposing of its entire output. Other plants report the same market situation.

GATHERING LINES TO LEASES

The short pipe line built to an oil lease is called a gathering line. Gathering lines are usually 2, 3, or 4 inches in diameter and run from the lease to the lateral or main trunk pipe lines. Lateral lines are 4, 6 or 8 inches and main lines 8, 10 or 12 inches in diameter.

OIL SECURITIES ARE DULL AND UNCHANGED

(Continued from Page 142)

states that indications point to an excess of consumption over production of oil in 1924, and therefore improved conditions in the industry may be expected.

Standard Oil of Kansas

The balance sheet of the Standard Oil Co. of Kansas, at the close of business December 31, 1923, shows:

Assets	
Real estate and plant.....	$ 6,097,726.82
Cash	138,258.90
Securities	1,077,538.91
Accounts receivable	1,872,395.50
Merchandise inventory	1,876,447.42
Total	$11,062,367.55
Liabilities	
Capital stock	$ 8,000,000.00
Accounts payable	712,322.13
Depreciation reserve	1,569,865.99
Surplus bal. Dec. 31, 1922 .....$1,700,561.58	
Less loss for 1923 280,382.15	
Less dividends paid in 1923 ..... 640,000.00	780,179.43
Total	$11,062,367.55

The Magnolia Petroleum Co. has declared a cash dividend of 1 per cent on the stock of the company issued, outstanding and of record on the books of the company at the close of business, March 21, according to an announcement by W. C. Proctor, treasurer. The dividend is payable April 5.

Statement of Illinois Pipe Line Co. as of December 31, 1923, shows total assets of $26,716,510, against $25,604,366 at end of 1922, and profit and loss surplus of $4,359,465, against $4,326,225.

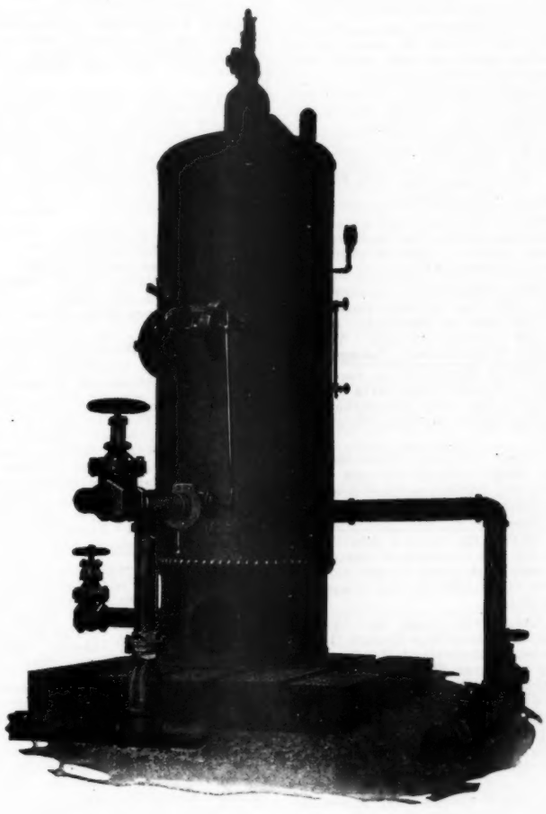
The Pittsburgh Oil and Gas Co. and subsidiary companies report for the year ending December 31, 1923, shows net income, $168,866.60; undivided surplus $495,059.

At the annual stockholder's meeting of the Penn-Mex Fuel Co., the board of directors and officers were re-elected. The secretary will issue a statement later.

The report of the National Transit Co. for the year ended December 31, 1923, shows net profit of $1,024,572 after depreciation and taxes, equivalent to $2.01 a share earned on 509,000 shares of capital stock (par value $12.50), compared with $930,203, or $1.82 a share, in 1922.

A dividend of $2 a share has been declared on stock of the Prairie Oil and Gas Co., payable April 30 to stock of record March 21, has been announced by the company.

Gas Saving and Saving Gasoline



The great profits from retaining the gasoline in the crude oil was demonstrated and brought about to the oil producer by the invention of the Trumble Oil and Gas Separator. This separator retains the gasoline in the oil by maintaining a pressure upon both oil and gas during the time the gas is leaving the oil, thereby insuring a better price for the oil as well as drying the gas.

The oil producer must use appliances to conserve both oil and gas in order to make his production pay.

Every oil field has its Trumble Oil and Gas Separator at work making added profits for the oil producer.

Information on Application

TRUMBLE GAS TRAP COMPANY

WILLIAM C. RAE, Sales Manager

804 Higgins Bldg., Los Angeles, California

Eastern Representative

C. F. CAMP

311 Atco Bldg., P. O. Box 289, Tulsa, Oklahoma

25 CENTS per line first insertion; 15c per line each additional insertion. Cash in advance.

CLASSIFIED WANTS

MAIL your advertisement now. It will be published next week. Cash with order.

LEASES—PRODUCTION

PRODUCING Royalties in Texas bought and sold. J. F. Marion Co., Magnolia Bldg., Dallas, Texas.

ROYALTIES and drilling contracts in the Northern Colorado Oil Fields. Ahlstrand, Greeley, Colorado.

FOR PANHANDLE oil leases near drilling wells at $2 an acre, write Dr. W. R. German, Canadian, Texas.

DESIRABLE—McClain County oil leases; cheap; no drilling necessary. Joe P. Crawford, Purcell, Okla.

22 OIL WELLS, 700 acres land, 450 cultivated; 11 miles San Antonio, $125 per acre. Redus Land Co., 428 Gunter Bldg., San Antonio, Texas.

FOR SALE—Oil leases and royalties; new developing field; five wells going down; great activity. See or phone H. M. Godfrey, Crescent, Okla.

WEWOKA—Oklahoma's newest oil field; have high class or cheap leases and royalties for sale, in Seminole, Pottawatomie and Lincoln Counties. W. R. Turner, 2123 Warren Ave., Chicago, Ill.

NEW FIELD just opening, southeast New Mexico. I own 10,000 acres leases; will sell all or part very reasonable. H. T. Orcutt, Southwest Building, Oklahoma City, Okla.

WELL near Tularaso, New Mexico, 3,680 feet deep, drilling in hard sand shale. Will sell 5,000-acre lease near for $15,000. Showing good. E. S. Rudd, El Paso, Texas.

FROM NOW ON, when I want to do business with the real men of the petroleum industry, I'm going to put my advertisement right here in this Classified Wants Section.

FOR SALE—Oil lease in Willow Grove new field, east Clay County, Tennessee, adjoining Cumberland-Monroe, west Kentucky, and near Paragon pipe line. G. W. Barksdale, Cookeville, Tenn.

FOR SALE at a bargain, 480-acre oil lease, Gridley, Kansas, Field. Two wells, complete power equipment. Entire acreage practically proven. Will sell part or entire lease. D. Schomerus, Iola, Kansas.

PRODUCERS, Refiners and others interested can secure protection acreage on one of the best anticlines in Montana. Recommended by United States Geological Survey and leading private geologists. Test well now drilling. Walter F. Brittan. Poplar, Mont.

HAVE A FEW one-thirty-second interests in well and 80 acre at $200; contract let for well to Wilcox sand. Good geological survey; close to production in Muskogee County. For further information, address W. P., Box 576, Muskogee, Okla.

OIL COMPANIES

WILL GIVE 5,000-acre lease to a reliable oil company for a test well on an uplift and doming. Heavy gas pressure struck several years ago, abandoned for lack of capital. Address Box A-120, care The Oil and Gas Journal, Tulsa, Okla.

FOR SALE—200-acre lease with five wells located in Douglas County, Kansas. Several offsets to be drilled against wells on adjoining lease, which came in from 25 to 150 barrels. Address Box X Y Z, care The Oil and Gas Journal, Tulsa, Okla.

WHITE SPACE at the top and bottom of an advertisement makes it conspicuous. Ask for it in your next advertisement. Figure the cost at regular rates per line.

EXCELLENT PROSPECT—480 acres Crawford County, Illinois; between production; 80 rods from good producers. Two sands; 760 and 1,208 feet; a very reasonable development proposition. For particulars, write. G. H. Larrabee, Box 308, Oblong, Ill.

LEASES—PRODUCTION

FOR SALE—At bargain prices, oil and gas leases, production and royalties in the Kentucky shallow fields. For full particulars and maps, address W. P. Harley, Bowling Green, Ky.

SOME BARGAINS in Kentucky production; leases in proven territory; good drilling propositions; royalties; low operating cost. Box 523, Bowling Green, Ky.

5c AN ACRE CASH — Texas school lands for sale by the State at $2 per acre: 5 cents an acre cash, balance in 40 years, 5 per cent interest. Send 6 cents postage for further information. Investor Publishing Co., Desk 8, San Antonio, Texas.

Production
Drilling Blocks
Leases and Royalties
Geological Value Given Preference
J. M. Allen
902 Petroleum Bldg., Tulsa, Okla.

IF I had my Wants listed in this section they would receive the same attention that thousands are giving the good advertisements already here.

FOR SALE

Forty acres, South Electra, Wichita County, Texas; lease $250 per acre, payable one-half cash, and balance in 60 days. Has production besides about $3 in salvage on lease. Fine promotion or development. Write or wire Jefferson Oil & Gas Co., 515 First National Bank Building, Birmingham, Ala.

TEXAS oil leases close to drilling wells in Luling Field, Guadalupe, Bexar, Webb and Medina Counties. Standard Form 88 five year leases. Much development taking place. Write for map and particulars. L. W. Stieren, 815 Alamo National Bank Building, San Antonio, Tex.

I HAVE wildcat acreage for sale in vicinity of well located by the same geologist who discovered the Sayre oil field and recommended by him to be as safe an investment as the Sayre Field. I can sell for $2 per acre and up. Dr. W. R. German, Canadian, Tex.

$1 PER ACRE for 1,000 or 5,000 acres in the Panhandle of Texas on surveyed structure. Well drilling to prove this territory. No rental due till 1926. A snap for someone. If interested, write and will forward printed geologist's report and map. 300 Alworth Bldg., Duluth, Minn.

IF INTERESTED in any branch of the oil industry, write us. We furnish at most reasonable prices, leases, royalties, production and deeded lands in the heart of the oil territory. Our clients have made as high as 4,000 per cent profit through investments with us. Old established firm; best bank references.
John S. Graham & Co.
First National Bank Building
Chickasha, Okla.

LAND to lease for oil drilling, in old oil survey. Mrs. W. R. Singleton, Talco, Texas.

METCALF COUNTY OIL LEASES

I own several very desirable leases near production, shallow drilling, 220 to 400 feet; production 5 to 20 barrels daily; 45 to 51 gravity oil, which I offer to the right parties on very easy terms. A. W. Richards, Edmonton, Ky.

1,000-ACRE drilling contract, located on adjoining structure to Union Oil Co. of California well in north Young County, Texas. Communicate at once with E. E. Tomlinson, Oil Scout, care St. Paul Hotel, Wichita Falls, Texas.

NEW OIL FIELD—ARKANSAS

I own several hundred acres in the heart of what promises to be the next mammoth pool. Will be drilled soon. Forced to sell portion in order to hold balance. It's priced to sell. Write or wire Lease Owner, Box 307, Camden, Ark.

LEASES—PRODUCTION

100 ACRES or part on approved structure northeast of Powell Field. Leroy Taylor, Southwest Building, Oklahoma City, Okla.

FOR SALE—An oil prospect, located 30 miles east of Lewistown, Mont. Cash or part royalty to right party. Write Mrs. W. M. Wedoo, Clear Lake, Iowa.

WISH TO SELL royalty and fee, 480 acres Butler County, Kansas. Two small wells. Leased for drilling. Make me an offer. Address, Box B-C,, care The Oil and Gas Journal, Tulsa, Okla.

TEXAS OIL LEASES; 10 cents an acre up to $10 an acre. Will sell tracts of 10 acres or more. Have 30,000 acres to choose from. All new five-year leases. Get full particulars. Gulf Realty Co., 275 Bedell Building, San Antonio, Texas.

KENTUCKY oil and gas leases for sale near production; drilling wells and on good structure. Write me for map and description. F. L. James, Box 194, Edmonton, Ky.

FROM NOW ON, when I want to do business with the real men of the petroleum industry, I'm going to put my advertisement right here in this Classified Wants Section.

GUADALUPE COUNTY

We have some new leases (dated January, 1924) with 25-cent rental, for sale at $2.50 an acre in tracts of 10 acres or more. Leases are standard Form 88. Will sell on easy terms. Two tests nearby reported to start soon. Get particulars. Gulf Realty Co., 279 Bedell Bldg., San Antonio, Texas.

1,000 to 2,000 ACRES in two blocks in the new Wainwright Field in Alberta, Canada. This is in the center of Bottle River Bend; excellent structure, which produces wet gas and oil. Will trade building and two corner lots on Main Street, close in, at Burkburnett, Texas, for drilling rig. Have been successful in wildcat work and would like more wildcat drilling. Box 567, Burkburnett, Texas.

OIL LEASES

We have leases 20 to 50 miles from the new Luling Field in Texas from 10c an acre up to $1 an acre in tracts of 10 acres up to 10,000 acres. We have many other leases along Balcones Fault and Sheffield (Marathon Fold) Terrace. Here are a few of our leases:

Blanco County	10c an acre
Bandera County	40c an acre
Coke County	40c an acre
Hays County	30c an acre
Guadalupe County	$2.50 an acre
Kerr County	15c an acre
Medina County	50c an acre
Travis County	25c an acre
Zapata County	$1.25 an acre

We also have leases less than 1 mile from production at higher prices. All these leases are the standard Form 88, 5-year leases and all were bought direct by us from the land owner, which accounts for the extremely low prices. We have 30,000 acres on hand to take care of your orders. Don't send any money now; get particulars and maps first. No obligation. Derrick up near Guadalupe leases.

GULF REALTY CO.
277 Bedell Bldg. San Antonio, Texas.

SHEFFIELD TERRACE (Marathon Fold) and Balcones Fault oil leases. We have good located leases along these folds as low as 40 cents an acre. Wildcat leases as low as 10 cents an acre. All new five-year Form 88 leases. Get maps and particulars. Gulf Realty Co., 278 Bedell Bldg., San Antonio, Texas.

NEW MEXICO—160-acre oil lease in San Juan Basin, on Coal Creek Arch—NE quarter Section 36-22-10. Runs 9 years, 5-cent rental. Price in 40-acre tracts, or as a whole, $2 per acre. Also several large blocks for development purposes to reliable operators, in heart of trend, on structure, in Chaves and Eddy Counties. W. H. McCullough, Roswell, New Mexico.

LEASES—PRODUCTION

FOR SALE—Fee simple title or lease on the east half of the east half of northeast quarter of 20-16-9, Creek County, Oklahoma. Proven oil and gas field. F. G. Drenning, 623 Kansas Ave., Topeka, Kans.

10,000 ACRES — Large block, good geology; producers' 88 form leases; good terms; will give undivided interest or set off acreage for a test well; liberal proposition to party with capital to develop it. For particulars and maps, write G. H. Larrabee, Box 308, Oblong, Ill.

IF I had my Wants listed in this section they would receive the same attention that thousands are giving the good advertisements already here.

FOR SALE—2,370 acres promising oil lands in northern Richland Parish, Louisiana; not far from the famous El Dorado Field; on good structure; price $12.50 per acre in fee. Write for particulars. W. T. Pitts, the Land Man, Indianola, Miss.

PRODUCTION FOR SALE—Will sell at bargain price, cash, oil and gas property on lease of over 1,000 acres, located in West Virginia; direct on railroad. Two oil wells making 15 barrels of high grade oil and two gas wells making over 4,000,000 feet, with pipe line connections. If you are looking for a real oil property, here is your opportunity. All statements guaranteed. C. Lewis Wilson, Oil & Gas Broker, Insurance and Law Bldg., Parkersburg, W. Va.

PRODUCTION FOR SALE—Seven wells; fully equipped; Butler County; three wells in Peabody Field; great bargain; some quick sale; three wells in Greenwood County, on line, 20-30 bbls.; 160-acre lease; seven wells in Wilson County; bargain. One well, 640-acre lease, 75-bbl. well, $10,000. These are $10,000, $16,000 to $60,000; worth your while. Also several thousand anticline real structural leases, on drilling contracts. See G. T. Kinsey, Geologist, Eureka, Kans., the new and coming big oil field.

TAYLOR and Green County boom in natural gas. No dry wells; all show gas or oil. Gas wells measure around 2,600,000 feet. Oil and gas men think acreage is all taken. As we live in Taylor County, we know of some very choice leases than can be gotten on reasonable rental; 3- to 5-year leases, payable semi-annually; a yearly rental of 50 cents per acre; yearly gas well rental of $200; no rental due for six month. Can give reference by best banks. Wire or write your wants before it's gone. Our fee is 20 cents per acre for securing leases. S. S. Gaddie & Son, specialists in securing leases, Bengal, Ky.

FOR SALE—Owners forced into a drilling campaign to protect other valuable acreage and must sacrifice 534 acres in four well equipped leases; 18 producing wells from one to four years old and settled. Numerous drilling locations offsetting good wells. Excellent proposition for gasoline extraction plant. Equipment first class, making 50 barrels. Price $65,000 terms or cash. Properties located in Warren County, Kentucky. Address Box A-125, care The Oil and Gas Journal, Tulsa, Okla.

ATTENTION OIL MAN or Investor—45-section improved ranch in central Gray County, in line of present oil development, being between Carson County oil field and Sayre, Okla. Field, and about 3½ miles from The Texas Co.'s "big gas well" now drilling near Lefours. Tract can be located on Panhandle ownership map as the George W. Medley land. Probably 20,000 acres now unleased for oil; surface is leased for ranching purposes at $200 per section, per annum. Price $10 per acre, in fee; terms, $35,000 cash, balance 15 equal annual payments, notes on or before with 6 per cent interest. Wire G. C. Davis, exclusive agent, Amarillo, Texas, for map and description.

25 CENTS per line first insertion; 15c per line each additional insertion. Cash in advance.

CLASSIFIED WANTS

MAIL your advertisement now. It will be published next week. Cash with order.

LEASES—PRODUCTION

BALCONES FAULT leases and royalties in active locality northeast of Powell. Frank Poorman, 3215½ Ross Avenue, Dallas, Texas.

WE HAVE block of leases approximately 6,000 acres in north central Kingfisher County. If interested telegraph or write George R. Holmes, Hennessey, Okla.

WHY WILDCAT?—347½ acres 70 miles south of Kansas City; shallow; pipe line; bargain. Henry Ahrens, Paola, Kans.

HAVE TWO blocks 5,000 acres each, Ottawa and Saline County, Kansas. For sale or drilling contract. Geological report. Address Box A-144, care The Oil and Gas Journal, Tulsa, Okla.

FOR SALE—Oil leases in southeastern New Mexico. Prices from 35 cents to $50 per acre. Dan C. Savage, Roswell, New Mexico.

FOR SALE—At bargain; one-half mineral rights in N SW 10-5n-5e, Seminole County. George Marlow, McAlester, Okla

FOR SALE—One-half mineral rights in 113 acres, Sections 4 and 9-4n-13e, $200; 40 acres in Section 12-8n-16e, $80; 90 acres in Section 31-2s-9e, $190. Marlow & Renfrow, McAlester, Okla.

GREENWOOD COUNTY, Kansas: will give 80 acres two locations from excellent producing wells; no bonus; one-fourth royalty; must be able to drill before April 25. Don't answer unless you are financially responsible. Address H. Martin, 3200 Sheridan Road, Chicago, Ill.

DRILLING CONTRACTORS

F. M. GRAY, JR., COMPANY
Drilling Contractors

We are prepared to drill wells of any size or depth anywhere.

Chicago, Ill. 15 E. Van Buren St.
Milwaukee, Wis. 290 Third St.

FOR SALE—EQUIPMENT

FOR SALE—Standard string of tools; cash bargain. Box 446, Cleveland, Okla.

NEW MACHINERY

Eight 45-h. p., field boilers; nine 11½x12 Ajax type engines. Address J. S. Schofield's Son's Co., Macon Ga.

FOR SALE—One two-cylinder horizontal 100-h. p. Miller Improved Gas Engine, on original foundation, and in best of condition. Fort Pitt Steel Casting Co., McKeesport, Pa.

ONE twin-cylinder, vertical type, 140-h. p., Lazier Gas Engine, complete with compressor and tanks, gas regulator, clutch pulley, etc. Engine in A-1 condition and guaranteed. Will be sold at a great sacrifice. Address The Double-O Milling Co., Bellevue, Ohio.

CASING

For sale a quantity of new and used 6⅝-inch, 17-pound, and 8¼-inch, 24-pound casing; this material is in first class condition and located at Bartlesville, Wynona, Pawhuska and Barnsdall, Okla. Write or phone to the Indian Territory Illuminating Oil Co., Bartlesville, Okla.

The Classified Rates are attractive. It costs but 25 cents the line for the first insertion and 15 cents the line for each additional insertion. Six words usually make a line. Cash with the order.

This useful table will help you to figure the cost of Classified Advertising in The Journal. Keep it for reference:

	One Time	Two Times	Three Times	One Month
3 lines..	$ .75	$1.25	$1.65	$2.10
4 lines..	1.00	1.60	2.20	2.80
5 lines..	1.25	2.00	2.75	3.50
6 lines..	1.50	2.40	3.30	4.20
7 lines..	1.75	2.80	3.85	4.90
8 lines..	2.00	3.20	4.40	5.60
9 lines..	2.25	3.60	4.95	6.30
10 lines..	2.50	4.00	5.50	7.00

FOR SALE—EQUIPMENT

FOR SALE—Automobile tires, all sizes, low prices and in good condition. Address Box A-135, care The Oil and Gas Journal, Tulsa, Okla.

1,000-FT. ARMSTRONG gas traction drills; immediate delivery into New Mexico shallow fields. Kaufman Co., 129 West Second St., Los Angeles.

FOR SALE—Good second hand Star rig; steam; with all necessary tools for 600-foot wells. Address 8550 Brandon Avenue, Chicago, Ill.

YOU WILL always be right in reading this Classified Section, as it is the best Petroleum Publication Classified Section in the world. It will help you.

FOR SALE—Standard string of tools; bits up to 20-inch; two boilers with fishing tools; located near Choteau, Mont. A bargain for cash. F. M. Gray, Jr. Co., 290 Third St., Milwaukee, Wis.

FOR SALE CHEAP

Brand new Troy 2½-ton trailer; cost $1,600; never used. For quick sale, $300.
Jack S. Smith & Co.
503 Barker Block
Omaha, Nebr.

FOR SALE — One No. 30 Star with calf wheels and jin pole, boiler and tools 12½ and down, extra good. Two miles from Longton, Kans., $6,000. P. E. Steinberger, Independence, Kans.

FOR SALE—Lazier gas engine. One twin cylinder, vertical type, 140-h. p., complete with compressor and tanks, gas regulator, clutch pulley, etc. Engine in A-1 condition and guaranteed. Will be sold at great sacrifice. Address, The Double-O Milling Co., Bellevue, Ohio.

FOR SALE—Several Bessemer gas engines from 15 to 165-h. p.; two 35-h. p., two 80-h. p. Bessemer direct-drive Bessemer compressors; two Ingersoll-Rand compressors, 10½x15½x12. Gas engines, generators and compressors; all sizes and makes. R. W. Russell, St. Marys, W. Va.

PIPE, VALVES AND FITTINGS

Due to our large stock on hand, in pipe, valves and fittings, standard and extra heavy, flanged and screwed, from ⅛-inch to 24-inch diameter, we are offering attractive prices for immediate shipment. Pipe cut and fabricated to specifications. Arrangements for extended credit can be made. Commonwealth Pipe & Supply Co., Inc., District Sales Dept., P. O. Box 5081, Boston, Mass.

THE NEW M. & V. GUNBARREL tank; manifold accommodations for two wells or 20. You can see them produce without releasing the gas pressure. No valves or cocks to open or close.

The gas comes up through the oil and holds the gravity. Made of heavy rust-resisting copper steel sheets; welded. Cannot leak oil or seep gas. It's simple, durable, dependable and fool proof.
M. & V. TANK COMPANY
Wichita Falls, Texas

FOR SALE—HEINEE BOILERS

Two 225 B. H. P.
One 435 B. H. P.

Rated on 10 square feet of heating surface per B. H. P. Boilers in good condition and will be sold on the Hartford steam boiler inspection and with insurance policy. Grates, gas and oil burners, oil feed pumps, feed water pumps, 600 H. P. Webster water heater, main line pipe bends and connections. We also have 35 and 70-k. w. General Electric generators, with switchboards, etc. Also a number of different sizes of water pumps; one American Well Works air compressor; one Ingersoll-Rand air compressor; shafting, pulleys, and hangers. Will be glad to quote low price and give particulars as to size and capacity on inquiry.

GRAIN JUICE COMPANY
Dallas, Texas

FOR SALE—EQUIPMENT

LARGE DRILLING MACHINE—10x 10 engine; 25-h. p. mounted boiler; tools, tanks, pump, gas engine, 1-inch pipe lines and complete; $3,000. Box 37, White Bluff, Tenn.

FOR SALE—27 Star Drilling machine. In Bartlesville district; with boiler and tools. H. W. Slack, Severy, Kans.

FOR SALE—2,500 feet left-hand thread, hydraulic 5-inch, 34-lb. pipe, with elevators, spiders, slips, left-hand tapering taps, spears. Notify Hill, Jones & Bell Co., Tonkawa, Okla., if interested.

25,000-BARREL TANK

400-barrel agitator; two 400-barrel stills, condensor boxes; four 100-h. p. boilers; large quantity of 2-, 3-, 4-, and 6-inch fittings, all in A-1 condition; priced at a bargain. Call or write F. A. Sanders, 420 Mayo Bldg., Tulsa, Okla.; phone Osage 7037, or Jennings, Okla., phone 98.

TRACTORS

TRACTORS — We have fifty six-ton Elephant tractors left. Price $1,500 while they last. The Sales Corporation, 1423 New York Ave., Washington, D. C.

TULSA REAL ESTATE

FOR LEASE—Will lease for a period of 10 years, splendid location for filling station. J. B. Jennings, 511 National Bank of Commerce, Tulsa, Oklahoma.

LOCATED in a highly restricted district, is a fine home consisting of five rooms, breakfast room and hall that can be purchased at a reasonable price, with good terms.

This home is very attractive and modern in every respect. It is one year old and in excellent condition. Street is paved. Sewer assessments fully paid. Driveway to garage; basement has been roughed in for a furnace. Trees and shrubbery are to be planted this spring, thus making it a real home. Address T. M. H., care The Oil and Gas Journal, Tulsa, Okla.

FARM LANDS FOR SALE

265-ACRE river bottom farm in 16-16 and 16-17. Write for details. Henry Barnes, 311 Muskogee Natl. Bank Bldg., Muskogee, Okla.

GOOD Kansas farm land for sale. Cash and terms or on crop payment plan. Some real bargains for cash. Emery R. Ray, Ingalls, Kans.

ONE OF THE FINEST tracts of land in southeastern Arkansas, lying on western border of Chicot County, and extends to the Louisiana line.

This tract consists of 2,142 acres and lies in the richest belt of land in this country. Is producing 80 bushels of corn to the acre and a bale of cotton. Together with this we find this land will surely produce both gas and oil wells as same has been examined by two geologists and they say that the same will undoubtedly furnish gas and oil.

We have sold the timber on this tract and this land will be sold subject to this deed and will sell same for $22.50 per acre. This land is protected from water by United States levees and we never have had any water on this land. We have 180 acres in cultivation and three houses on same. This price is very low and is made to settle a partnership. Write or wire, Kelley Lumber Co., Searcy, Ark.

WANTED

WANTED—Associates to join me in forming a development syndicate. M. L. Wotton, 709 N. L. St., Tacoma, Wash.

WANTED—To sell or trade, good well drill and tools all in Number 1 shape; will drill 1,000-foot hole. A. E. Meedy, R. F. D. 4, Butler, Okla.

WHITE SPACE at the top and bottom of an advertisement makes it conspicuous. Ask for it in your next advertisement. Figure the cost at the regular rates per line.

WANTED

WANTING someone to drill for oil on half section of land in the Pawnee River Valley, Pawnee County, Kansas. Write C. Kohntopp, Harrisonville, Mo.

WANTED—Water well machine of the following makes: Lisle Peerless No. 21; Dempster No. 15; Clipper No. 1; Sanderson Cyclone Class A machine to buy or lease. Must be in good condition. Charles Kennedy, St. Clairsville, Ohio.

BROKER OR LEASE SALESMAN

Want to raise money enough to drill test well on good structure; A-1 proposition; can you handle it? 4,000 acres. Address Box A-121, care The Oil and Gas Journal, Tulsa, Okla.

OIL PRODUCING company owning 800 acres of proven leases with 250 barrels daily production, high gravity oil; wants to borrow $100,000 for three years at 7 per cent interest. No bonus will be paid, but we will pay reasonable expense of appraisers. Property worth $500,000. James D. Crenshaw, San Antonio, Texas.

WANTED—To connect with someone who can sell $50,000 worth of common stock in incorporated manufacturing company manufacturing patented article with nation-wide sale. Money needed to expand business. Liberal commission. Address Box A-114, care The Oil and Gas Journal, Tulsa, Okla.

HELP WANTED

EDITOR—Research Director, by independent statistical company specializing on Petroleum. Must understand statistics of the industry and their practical application. Ability to write concisely and forcibly essential. Address Box A-140, care The Oil and Gas Journal, Tulsa, Okla.

WANTED in your district, a representative now calling on tank manufacturers, builders, or contractors to whom contracts for building tanks are sublet and who are also called in for repair work and removals, to introduce material absolutely essential to tank manufacturers, etc. Address Box M C, care The Oil and Gas Journal, Tulsa, Okla.

WANTED—High grade engineer capable of designing and doing his own estimating on general oil refinery equipment, 55,000-barrel tanks, etc. Must have had broad selling experience on large tank contracts and general knowledge of diversified special steel plate construction. A-1 references required. Address Box A-110, care The Oil and Gas Journal, Tulsa, Okla.

POSITION WANTED

DESIGNING ENGINEER for complete plant layout of refineries and gasoline plants. Address Box W. W., care The Oil and Gas Journal, Tulsa, Okla.

PETROLEUM and Industrial chemist with many years' experience, desires position. Address Box A-123, care the Oil and Gas Journal, Tulsa, Okla.

CONSTRUCTION ENGINEER—Executive for refineries and gasoline plants. Address Box E. G., care The Oil and Gas Journal, Tulsa, Okla.

WANTED—Position as rigger or structural steel foreman, good service letter, will consider foreign job. Address box A-141, care The Oil and Gas Journal, Tulsa, Okla.

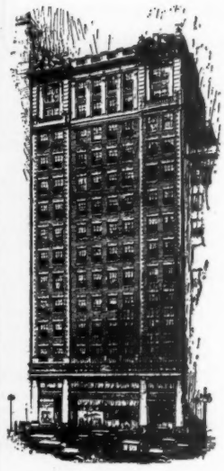
REFINERY SUPERINTENDENT

Energetic executive, 14 years' experience here and abroad. Thoroughly familiar with all grades of crudes, specialist in manufacture of high grade lubricating oils. Has successful record. Address Box A-131, care the Oil and Gas Journal, Tulsa, Okla.

REFINERY SUPERINTENDENT—College graduate, at present employed, familiar with light and heavy crude, asphalt and road oil, all types of cracking plants and refinery construction; would like to make a change. Would consider taking charge of large cracking installation. Inquire Box A-126, care The Oil and Gas Journal, Tulsa, Okla.

There are more Classified Wants on Page 154

624 South Michigan Avenue



Headquarters for Petroleum and Allied Industries

THE ideal location of the Blum Building—plus its perfect appointments as an office building—has made it known as headquarters for the Petroleum and allied industries.

Adjacent to the Blackstone Hotel—but a few doors south of the Congress—and close to the Standard Oil Building, it is in reality the hub of the Petroleum Industry in Chicago.

Two private offices and reception room as low as $85.00 per month

We will be glad to send you a booklet descriptive of the many advantages of the Blum Building and submit a plan that will most economically meet your needs. Space will be divided to suit your requirements.

A few tenants in the Blum Building

Acme Petroleum Co.
Roxana Petroleum Co.
National Petroleum Marketers Association
Ennis-Bayard Petroleum Co.
Lakeside Petroleum Co.
Marvel Equipment Co.
Wolverine Service Stations
Industrial Petroleum Co.
C. L. McGuire Petroleum Co.
Northland Oil Co.

ROSS & COMPANY
Railway Exchange
CHICAGO

Mounted Diamond Drill for OIL DRILLING

THIS drill is especially adapted for wildcatting where shallow holes and frequent moves are necessary. The drill has a capacity of 750 feet and is driven by gasoline. The entire equipment is mounted on a substantial steel truck with ample room on the platform for a tool box and drill rods.

Write for drill book No. 16

E. J. Longyear Company
Minneapolis, Minnesota, U.S.A.

CLASSIFIED WANTS

POSITION WANTED

CIVIL ENGINEER wants position as surveyor; 15 years' experience; past four years with large Mid-Continent Oil Co. Address Box A-145, care The Oil and Gas Journal, Tulsa, Okla.

POSITION WANTED — Thoroughly experienced gasoline plant office man. Sales and accounting. Address Box A-142, care The Oil and Gas Journal, Tulsa, Okla.

POSITION WANTED — Service and bulk station manager. Fair lube salesman. Address Box A-143, care The Oil and Gas Journal, Tulsa, Okla.

A COMPETENT and experienced oil man in field department; superintendent one of the largest producing companies in Wyoming four years; wishes similar connection with reliable company any place. Best references furnished on request. Address F. C. Lydon, Box 1236, Cheyenne, Wyo.

IN USING this Classified Section for my advertising purposes I will be taking the best means possible to place my wants before the real men of the industry—the readers of The Oil and Gas Journal.

SPECIAL KNOWLEDGE Venezuelan (Maracaibo) oil trade. Working knowledge Spanish; practical seaman; highest references. Desires appointment where enterprise and energy will secure permanency and advancement. Address Box 1-Z, care The Oil and Gas Journal, 30 Church St., New York City.

BUSINESS OPPORTUNITY

INTERNATIONAL financing; securities sold; no advance fees. Box 471, Oklahoma City, Okla.

FOR SALE

150,000 barrels stored oil; three 55,000 barrel tanks crude oil. One at Bristow, Okla., two at El Dorado, Ark. Interested parties address P. O. Box 2103, Tulsa, Okla.

CAPITAL SEEKERS—Put your project before 470 Canadian brokers and bank managers; cost trifling, under my plan. Details free. Amster Leonard, First National Bank Bldg., Chicago, Ill.

OIL LOCATERS—If you have had bad luck and got dry holes, let us locate you right. We work by contract or day. References. Address P. O. Box 181, Lamont, Okla.

GOOD SERVICE PLEASING

The excellent service rendered to the men of the industry by The Oil and Gas Journal Classified Wants Section is appreciated by them.

They use it is a direct medium to broadcast their wants to fellow readers who respectfully consider every advertisement in the Classified Wants Section.

Good machinery, equipment, tools, etc., are being kept in operation by reason of alert men buying and selling through the Classified Wants Section.

These men know that it is economically sound for a concern to sell good equipment that it cannot use. Therefore, thrifty executives use the Classified Wants Section as an economizing move that is helpful to the entire industry.

Its absolute merit has made it the greatest petroleum publication classified section in the world.

PIERCE OIL REORGANIZATION

The management of the Pierce Oil Corp. and bankers interested in the company are contemplating reorganizing the company.

The reorganization plan, it was said, is to raise approximately $9,000,000 of new capital through the formation of a new corporation which will take over the property and assets. The stock of the new corporation, it is said, will be exchanged for the stock of the present company. This will call for an issue of about 1,200,000 shares of stock in the new organization. In addition the new company is expected to offer about $6 or $8 a share. There will be no change in the management.

BUSINESS OPPORTUNITY

SOUTH AMERICA—the last great frontier. Investigate her prospective and proven oil lands. Booklet of information 25 cents. Jess Akers, Oil Scout, Breckenridge, Texas.

FINANCIAL

Constructive financing. Charles Wesley Barrick, New Martinsville, W. Va.

CAPITAL supplied, manufacturing oil and other legitimate business, through sale of securities on reasonable commission. House established 30 years. Winn & Co., 115 Broadway, New York City.

CAPITAL

IF YOU were convinced in your own mind that you had the largest oil field in the United States would you test it out for 4,000 acres of leases? Address Box A-122, care The Oil and Gas Journal, Tulsa, Okla.

WORTH SENDING FOR

Free Booklet, "Royalties, Gold Bonds of the Oil Industry." Of interest to those who desire a regular monthly income on a small investment and can't afford to lose. It will pay you to write without delay. C. T. Gregg, Ford Bldg., Great Falls, Mont.

BUSINESS OPPORTUNITY

Party with Drilling Rig and Block of A-1 "Wild Cat" acreage, South Arkansas, desires to communicate with responsible parties who will furnish part or all of actual cash to drill well. Acreage assigned to you. Just the thing for new company or group of speculators, who want a real gamble. Write or wire Frank N. McClain, Colonial Hotel, Camden, Ark.

CAPITAL RAISING—Campaign planned, written, printed—everything complete, ready to mail to investigators. Twenty years' experience handling investment advertising. Clients all over America. Big, illustrated book, "How to Raise Capital," free if you submit detailed outline of your proposition. Ernest F. Gardner, L-511 Ridge Arcade, Kansas City, Mo.

FOR SALE—MAPS

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FREE ARKANSAS MAPS showing oil development. We have a limited number of Arkansas State maps in colors, showing the trend of the oil development. If you want one of these free, send 10 cents for postage. Bray-Hawthorne Co., Inc. Arnold & Doyle Building, Camden, Ark.

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MAPLE SYRUP direct from producer. Guaranteed 100 per cent pure and full weight, $4.50 per gallon, delivered. Special price on orders of 20 gallons or more. Orders received now for April shipment. A. L. Merry, Pine Slope Farm, Route 3, Belmont, New York.

LETTERHEADS—PRINTING

OIL FIELD LEGAL BLANKS—Leases, assignments, releases, township plats, gauge books, run tickets, time books, well records, etc. Request on your letterhead gets free catalogue. Oil Press, 215 East Third St., Tulsa, Okla.

MAILING LISTS

GUARANTEED MAILING Lists (or calling lists) of oil company purchasing agents and superintendents throughout entire Mid-Continent Field. Oil Industry Register, P. O. Box 1742, Tulsa, Okla.

107 NAMES of lease buyers of largest oil companies in Tulsa. For sale by Oil Industry Register, P. O. Box 1742, Tulsa, Okla. Phone Osage 574.

Attorneys-General Demand Regulation For Oil Industry

CHICAGO, March 15.—The executive committee of the national conference of attorneys-general after a two-days' closed meeting summoned by Attorney-General Spillman of Nebraska, formally called upon President Coolidge, Congress, the Federal Trade Commission and the executives of States to take immediate action to establish a more rigid regulation of the petroleum industry.

Acting under authority of the last meeting of the entire association, the executive committee outlined a program of activity and requested congress "to provide immediately a special and sufficient appropriation to the Federal Trade Commission for the conduct and prosecution of this work."

Reciting that "the industry seems to be under such control that prices may be raised over night at every gasoline station in the nation," the statement demanded "that all unfair trade practices in the production, manufacture and distribution of gasoline and other petroleum products be abolished without delay."

The statement was signed by eight members of the executive committee as follows:

Attorneys-General O. S. Spillman, Nebraska, chairman; George M. Napier, Georgia, secretary; Clifford L. Hilton, Minnesota; Herman L. Ekern, Wisconsin; Benjamin J. Gibson, Iowa; Jay R. Benton, Massachusetts; George F. Short, Oklahoma; Harvey H. Cluff, Utah.

The action suggested seeks these ends, according to the statement:

"The execution in true spirit" of the Standard Oil dissolution decree of 1911; abolition "without delay of all unfair trade practices;" the abolition of trade agreements between dominant factors in the industry.

The statement also demanded conservation legislation and that the powers of the Federal Trade Commission "be enlarged to the end that there may be no doubt as to its power to accomplish the results sought."

Oklahoman's Stand

Attorney-General Short of Oklahoma, declared his approval of the executive committee's action was limited to its request for the full economic factors in the petroleum industry. When these factors are fully established, he said, the justification of present price tendencies will be common knowledge. In a statement, Mr. Short, citing recent figures on production and consumption of crude oil, predicted a further advance in gasoline prices in the near future.

"In the month of February," he said, "crude consumption in America exceeded production by more than one million bbls. The consumption of crude crossed the production curve in January, 1924, and in accordance with the law of supply and demand, in my opinion, a further increase is inevitable. The lowest prices for gasoline since the summer of 1916 was recorded in August, 1923, when the crude production in America was the greatest in the history of the industry."

Pointing out that crude production in American fields in 1923 was 172,121,782 bbls. in excess of the production of the previous year, Attorney-General Short called attention to the violent declines in gasoline prices in the same year.

"Gasoline was the only principal commodity of consumption which reached the pre-war levels in 1923," he said. "Today gasoline is 12 per cent above the 1923 wholesale price; farm products are 42 per cent higher, on the same basis; the average of all commodities is 54 per cent higher; building materials are 90 per cent higher; clothing is 99 per cent higher.

Invites Public Confidence

"These figures constitute my reason for favoring an honest determination of the facts. I have invited the whole conference to Oklahoma to watch the production and manufacture of crude and gasoline. I am confident that when the economies of the situation are accurately determined, the industry will enjoy the full measure of public confidence. That is why I am a party to the statement today."

The formal statement of the meeting, pointing to the recent advances in gasoline prices, stated that since it was unknown "whether continued increases in the price of gasoline and other petroleum products are in prospect," the chairman, "deeming the matter of sufficient importance, called this meeting.

"We suggest that all in authority, either in the States or in the federal government," the declaration continued, give consideration to this question of prices of gasoline and other petroleum products. Petroleum and its products have become necessities of life. They are essential to the welfare of our people. Nature has supplied an abundant store of petroleum, which geologists inform us will provide for a long period of time. It is a natural resource. The people are entitled to its use at a reasonable price. Exorbitant and extortionate prices should not be tolerated."

AMERICANS MUST HELP EACH OTHER IN THE WORLD STRUGGLE FOR OIL

KEY FOR WORLD MAP SHOWING OIL PRODUCING COUNTRIES

1. Canada.
2. United States.
3. Mexico.
4. Trinidad.
5. Colombia.
6. Venezuela.
7. Ecuador.
8. Peru.
9. Argentina.
10. England.
11. Alsace.
12. Germany.
13. Czechoslovakia.
14. Poland.
15. Rumania.
16. Russia.
17. Italy.
18. Algeria.
19. Egypt.
20. Persia.
21. India.
22. Japan.
23. Sarawak.
24. Dutch East Indies.

In view of the heavy drain on American oil resources and the tremendously increasing domestic consumption, the American oil industry needs every encouragement in developing petroleum resources in foreign countries.

"There is urgent need of pioneering the world for oil to meet the needs of this organization, but there is no warrant for regarding this advance into new fields as beginning a contest whose aim is world conquest," says George Otis Smith, director of the United States Geological Survey.

"The present need of the United States for oil from abroad can be met only by world-wide exploration, development and operation by American companies backed by our Government and we should expect other nations that are embarrassed by similar or even greater discrepancy between consumption and production to adopt the same policy."

Foreign interests have developed petroleum sources in many countries where restrictions operate against American competition. The Federal Trade Commission recently issued a report on foreign ownership in the petroleum industry which stated:

"The sources of supply of the domestic industry are concentrated within its own borders and in Mexico, while those of its principal competitor are widely distributed throughout the world. It appears obvious that a nation having widely distributed supply and storage facilities and owning the means of distribution will have certain advantages in world trade against one having concentrated supply."

GROSS RECEIPTS LAW UPHELD

AUSTIN, Tex., March 17.—The State gross receipts tax law was upheld by the third court of Criminal Appeals in affirming Travis County district court in the appeal of the Dallas Gas Co. vs. State of Texas. The State sued for collection of $42,428 and penalties alleged due under the gross receipts tax law by the Dallas Gas Co., and was given judgment in the trial court.

LAST MINUTE *from* OKLAHOMA

In the midst of a sensational week, a shallow well in the Coweta district of Wagoner County struck a "grass roots" sand which yielded real gusher production. It was Johnston, Odell & Young's No. 1 Secrest, C SW NE SW, Section 11-17-16, about three-fourths of a mile east of the pool opened by the same interests some months ago. Sand was topped at 760 feet, and was estimated good for 1,500 bbls. It was making 40 bbls. an hour at last reports. The Prairie Pipe Line Co. had a line to the well.

The Mutual Oil Co.'s No. 2 F. Drexel, SE cor. Section 2-22-10, Osage County, an old well making 60 bbls. from 1,940-foot sand, was drilled deeper to sand at 2,150 feet, where it came in unexpectedly at the rate of 100 bbls. an hour, tanking 2,264 bbls. in 20½ hours ended 7 a. m. Tuesday. Gravity tests 41.6 degrees. The well one location west came in some months ago for 1,800 bbls. from sand at 2,216 feet and is still holding up to 200 bbls.

The Barnsdall Oil Corp.'s No. 22, NE cor. Section 31-21-12, Osage County, made 1,450 bbls. the first 24 hours after being drilled 4 feet in the sand topped at 1,942 feet. Gravity of the oil was 48.7 degrees.

In the Cromwell Pool, T. B. Hoffer & Shore Line Oil Co.'s No. 1 Stidham, NE cor. SE NE, Section 16-10-8, gauged 2,940 bbls. in the last 24 hours. The McMann Oil Co.'s No. 1 King, SW cor. NW, Section 22-10-8, gauged 1,016 bbls.

West of the Papoose Pool in Hughes County, Stein and others' No. 1 Brown, SE cor. SW NW, Section 8-9-9, passed through a dry sand at 3,055,63 feet and was drilling ahead at 3,100 feet.

In the Tulsa Country Club Pool, two wells were brought in by the Mutual Oil Co. on the lease recently purchased from the Peer Oil Corp. and the Lorraine Petroleum Co., and Munn Bros. & Glidden. Their No. 1 Harlow, NE cor. SW, Section 28-20-12, was good for about 300 bbls. from sand at 2,044-61 feet. No. 5 Mackey, SE cor. NW, same section, on the old Peer-Lorraine property, made about 800 bbls. from sand at 2,010-14 feet. The Mutual Oil Co. was abandoning its No. 8 Mackey, (formerly Munn Bros.) NW cor. NE, Section 28-20-12, at 2,330 feet, after plugging back and shooting without results.

HOW CRUDE OIL IS BOUGHT

In general, crude oil is purchased in two ways. It is bought by big purchasing companies at "open market" prices that are announced or "posted" by such companies. These companies in turn either store or sell the oil to refiners after arranging for its transportation by pipe line. The other way is the purchasing direct from the producer by the refiner either for current needs at the established posted prices or for long term requirements by contract. Frequently the refiner offers premiums over the posted price.

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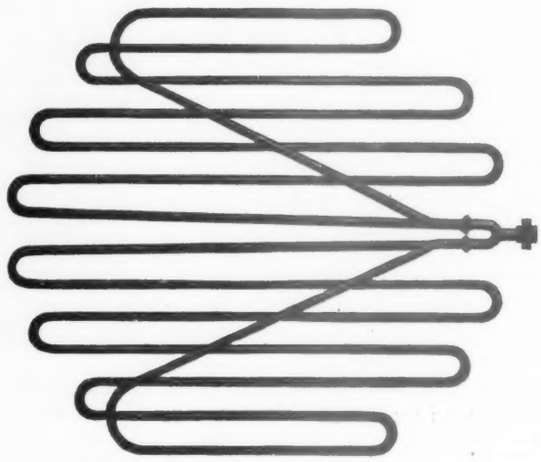

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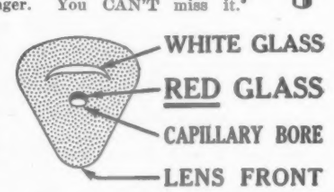
The TAG-HESPE Feature

The TAG-HESPE Red Reading Column shows as a broad red line from the top of the mercury column to the top of the tube. When the mercury rises it covers more of this red line; when the mercury falls a correspondingly greater length of the red line is exposed. The decided contrast between this bright red line and the metallic grey of the mercury brings to the accurate mercury thermometer the easy readability of the red spirit instrument without any sacrifice of accuracy. TAG-Hespe thermometer glass (tubing) is in every way similar to ordinary lens front thermometer glass except that in TAG-Hespe Glass the BACK of the fine capillary bore (up and down which the mercury travels) is made of bright red glass. This red streak of glass extends all the way from the top of the thermometer down to the bulb. Note particularly that the red glass is in the back of the bore and NOT at the back of the tube (see cross-section below.

The red line attracts the eye at first glance and it is easy to follow it down and take the reading at its bottom which is, of course, the top of the mercury column. The broad line of red stands out like a semaphore set at danger. You CAN'T miss it.

The TAG-Hespe Column is an EXCLUSIVE TAG feature. It is a RECENT improvement in thermometer manufacture which marks the greatest advance yet achieved. Send for Bulletin G-911.



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SINCE 1769

OIL MEN TO HEAR PETROLEUM DISCUSSED

(Continued from Page 32)

For Wednesday, luncheon and entertainment at the South Shore Country Club has been provided for the noon hours, while in the evening, they will be guests at a theater party. For Thursday they will be guests at a luncheon and bridge, with the Chicago Yacht Club acting as host, and in the evening they are to participate at the function of the annual banquet and the dancing.

Oil's Insurance Problems

Insurance problems in connection with the various phases of the oil industry have been such that they have commanded the attention of some of the best insurance men in the country, who have endeavored to assist the oil men in working out their

C. W. WHITEHAIR
Whitehair Brothers Co., Cleveland, Ohio

valuations, risks and rates. Considerable work has resulted in greater safety in handling petroleum products and insurance companies are giving better rates to oil companies who are observing the additional safety features in oil refining and distribution.

Charles W. Whitehair, of Cleveland, Ohio, an insurance man of long experience, who has been connected with the oil business in a professional way, will speak at the convention of the American Oil Men's Association, Chicago, March 26, on the subject "The Hazard Associated with Gasoline Distribution from a Liability Standpoint." He will tell of his experience in writing insurance for oil companies and wll show some of the problems of hs part of the oil business. His subject is new and is one of extreme importance to oil men in every branch of the industry. He will speak Wednesday afternoon.

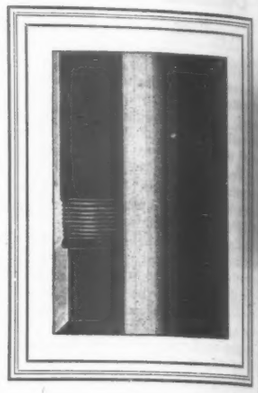
The Petroleum Week parade, proposed by the Chicago Oil Trades Committee for Tuesday, March 25, has been abandoned owing to the weather. It is being considered to substitute a campaign of display advertising in the press.

BUYS GOVERNMENT TANKER

The 80,000-bbl. oil tanker, Shreveport, has been purchased by the Cities Service Refining Transport Co. from the United States Shipping Board and will be used to transport, with the rest of the company's sea-going tankers, California and Gulf Coast crude oils to the refinery at East Braintree on Boston Harbor.

OIL DEFIES PROPHECY

No other industry holds quite the amount of uncertainty that the oil business does, because no one can foretell for any long period ahead the course of petroleum production.—Walter Teagle, president of the Standard Oil Co. of New Jersey.



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HANDICAPPING THE OIL BUSINESS WILL RESULT IN HIGHER PRICES

By N. O. Fanning

NEW YORK, March 17. — The approximate investment in the oil business of the United States during the five years from 1919 to 1923, inclusive, increased from about $5,000,000,000 to $8,000,000,000. This increase is accounted for largely by expenditures for new facilities by the oil companies, which were paid for from surplus earnings, or from funds raised through public financing.

During the two years 1919 and 1920 oil refining facilities, tankers and other facilities increased at an enormous rate, in some cases being doubled over the previous figures. Oil prices increased during the two years, reaching their peak in 1920. The additional earnings thus accruing to the oil companies not only provided money to pay for this expansion, but enabled them to pay larger dividends, which increased the companies' credit and enabled them to borrow money from banks and the public to invest in necessary facilities to care for an ever-increasing demand for petroleum products.

The last three years of the five-year period—1921, 1922 and 1923—contrasted with 1919 and 1920, in that during the bulk of the latter period oil prices were about 33 per cent to 50 per cent of the 1920 level, consumption declined heavily in one year, and the oil business as a whole was not prosperous.

Witness the net earnings of three of the biggest oil companies during the period:

	Standard of New York	Texas Co.	Gulf Oil
1919	$43,166,109	$18,671,416	$11,460,854
1920	39,405,631	31,089,372	28,543,157
1921	9,698,971	8,770,871	9,068,787
1922	19,434,734	6,854,972	19,752,067

Although 1923 annual financial reports have not been issued, the statements are not expected to show any more favorably than those for 1921, due to the low prices prevailing during the year, despite the fact that a record volume of business was done.

It is not necessary to show the earnings of additional companies, as those of Standard of New York, The Texas Co. and Gulf Oil were as a rule representative, although if anything the showings they made were better in 1921 and 1922 than those of many other companies.

Expenditures During Period

During the five years from 1919 to 1923, inclusive, the Standard Oil and larger independent oil companies alone spent approximately $2,000,000,000 in additional facilities for supplying oil to the consumer, and also in taking care of a large surplus of crude oil which was practically thrown upon them in spite of themselves. The larger burden fell upon the big refining companies, and two-thirds of the expenditures, or approximately $1,333,000,000, came during the first two years of the period, namely 1919 and 1920.

The burden thus entailed would not be so large if it had been spread out through the entire oil industry. This is a phase which is overlooked by the majority of critics of the industry. The $2,000,000,000 thus spent by the larger, established concerns was invested in facilities which will be largely of permanent value to the oil industry. In addition, however, another $1,000,000,000 easily has been spent during the same five-year period in facilities which may never be of much, if any, economic use.

Figures of public financing by oil companies during the period under review tell the story of the money put into the oil business other than that taken from surplus earnings of the companies themselves. The Standard Oil companies raised about $456,000,000 during the period through public financing. The larger independents, the names of which are more or less familiar to oil men and careful investors, raised an additional $466,000,000, making the total amount raised by the established companies $922,000,000, or approximately half of the amount actually put into new facilities. The remaining $1,078,000,000 was provided from surplus earnings.

The fact that much additional money was put into facilities, and spent otherwise, by a large number of less representative companies is witnessed by the large amount of public financing other than that included in the foregoing figures. This financing was in smaller individual amounts, but the total, nevertheless, is very large.

Summary of Expenditures

Expenditures in additional facilities by the old-line Standard and independent oil companies during the five years from January 1, 1919, to January 1, 1923, are estimated as follows:

Refining capacity	$ 900,000,000
Tank cars, tank steamers and pipe lines	695,000,000
Marketing facilities	250,000,000
Additional tankage for crude oil	75,000,000
Total	$1,920,000,000
Paid for through public financing	922,000,000
Paid out of earnings	$ 998,000,000

In addition to the money put into new facilities by the old-line companies and the smaller and less firmly established concerns, huge amounts have been put into "fake" enterprises labeled "oil" but having no real connection with the petroleum business. Such amounts indirectly lessen the amount of public money available for legitimate oil enterprises, and therefore are as injurious to the industry as to the persons putting their savings in them.

Instance of Overexpansion

In placing money in new facilities, oil companies have to guess, to a certain extent, as to just how far to go. It is naturally impossible to estimate the future demand for oil.

An instance of this is the situation which existed in 1921. It was pointed out that the bulk of the money put into new facilities was invested in 1919 and 1920. All indications were then that 1921 would be a new record year in consumption, and the oil companies provided accordingly. As a rule, the old-line companies overbuilt somewhat but many of the smaller companies did so on an extravagant scale. Official figures of oil refining capacity in the United States indicate that during the five-year period refining capacity exceeded the actual runs by 108,000,000 bbls. to 269,000,000 bbls. At the close of 1923 those refineries which were operating were only doing so to the extent of 76 per cent of their capacity, and of course there were many plants shut down entirely. There are numerous plants now which have never showed a profit, and probably never will.

The following table shows refinery consumption of crude, refining capacity (on an annual throughput basis) and excess capacity, during the five-year period (figures in barrels):

	Consumption	Capacity	Excess Capacity
1923	593,000,000	821,000,600	228,000,000
1922	520,000,000	789,000,000	269,000,000
1921	445,000,000	689,000,000	244,000,000
1920	434,000,000	558,000,000	124,000,000
1919	364,000,000	472,000,000	108,000,000

These figures, while showing the situation as a whole, do not give a true picture of the present situation in the oil business. Despite the indicated surplus of refining capacity, it will be found that the larger refining companies have during 1922 and 1923 steadily added to the capacity of their big refineries. This proves that so far as the old-line, established concerns go, they did not so drastically overbuild, and in fact are now just able to keep up with the demand for oil products; while, in contrast, many plants uneconomically situated, but included in the official figures above given, have been shut down for years, or have been operating on a 20 per cent to 60 per cent capacity basis. The conclusion is, there-

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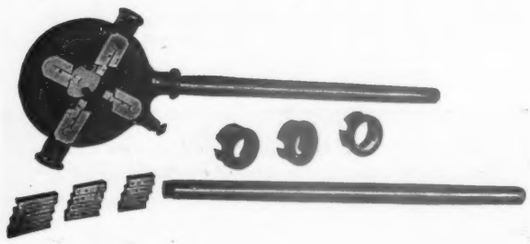

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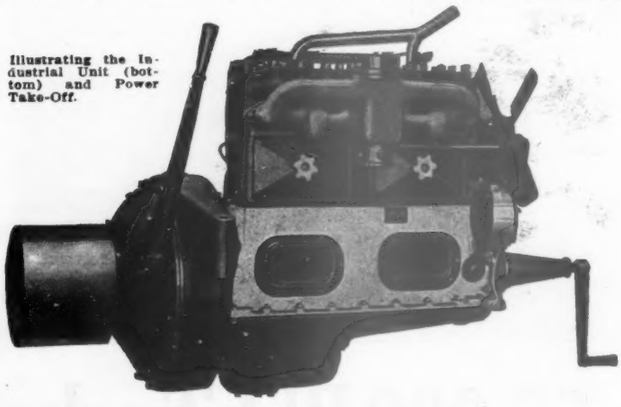
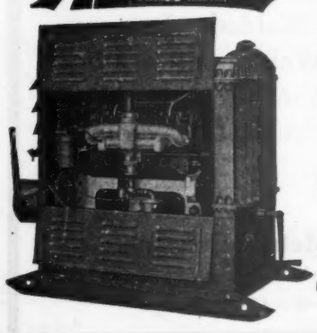


Illustrating the Industrial Unit (bottom) and Power Take-Off.

Waukesha
TRADE MARK



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fore, that while, theoretically, there is a great deal too much refining capacity, the fact is that there is too much uneconomically situated, and therefore worth little or nothing, and not enough capacity economically situated on good harbors, etc.

New Expansion Necessary

With the demand for oil growing steadily, the old-line oil companies must make constant expenditures to increase their facilities. In order to do this, they must earn enough money to put into new facilities and at the same time pay dividends. Failure to make a good return to their stockholders will impair their credit, and make it difficult for them to borrow from the banks or the public. The public will pay ultimately by a shortage of oil products, and consequently, higher prices for such products.

This situation, in the opinion of many observers, threatens at the present time. In order to offset the anticipated decline in oil production over the next few months, new fields will have to be opened up. Yet it is said that oil companies hesitate to increase crude oil prices for the purpose of encouraging wildcatting, because of a threatened "oil investigation" at Washington. Such hesitation, it is believed, will result in a failure to offset such decline in production, a shortage of oil, and then, according to all natural and economic laws, "runaway prices" for crude oil and refined products.

AMBASSADOR REPORTS ARGENTINE OUTPUT

WASHINGTON, D. C., March 17.—Increased production of crude petroleum is reported from the Government controlled fields in Argentina by Ambassador Riddle, at Buenos Aires. Further development is planned, he states. The output of the Government reserve at Commodore Rivadavia was placed during 1923 at 372,000 cubic meters, approximately 2,344,000 barrels, and 7,300 cubic meters, approximately 2,344,000 barrels, and 7,300 cubic meters produced at Plaza, Huincul.

The commercial secretary to the British Legation at Buenos Ayres has compiled a report on the financial, commercial and economic conditions of the Argentine Republic, which has just been issued, which reads in part: During 1923 oil has been discovered in apparently payable quantities in the northern province of Jujuy, at a depth of 530 meters. This discovery is for the present of more importance to the State railways for local fuel requirements than for commercial interests, on account of the cost of transport, and in any case the provincial Government of Jujuy claims the whole province as an official reservation. The Argentine Government has submitted a bill to Congress which will authorize them to spend up to the sum of 20,000,000 pesos paper in the construction of two oil distillery plants, in extending drilling operation, and in providing further storage tanks. The Government proposes to negotiate the necessary credit operations for this amount with any official or private entity, the service of the loan to be made by the revenue produced by the oil fields.

SEEK POLISH CONCESSION

A report from Warsaw states that the scheme to create an Anglo-French-Italian syndicate to exploit the mineral wealth of Poland is gradually assuming definite shape. It is stated that the syndicate may be entrusted with the development of the oil areas north of Krosno. Owing to the continued depreciation of the Polish mark, royalty holders, who only receive payment for their crude after delivery of the same to the Government, have been getting but a fraction of the value which the oil had at the time of its delivery. It is stated that an arrangement is under consideration with a view to establishing a firm basis of calculation of the crude oil price which will protect the royalty owners against loss on their sales to the Government.

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Like an "Extension" 'phone, Mercury Bulb in one place, Indicating Dial in another.

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GILMORE SECRETARY MICHIGAN JOBBERS

James A. Gilmore, former secretary of the National Petroleum Marketers' Association of Chicago, has assumed his new duties as field secretary of the Michigan Independent Oil Men's Asso-

By James R. Gilmore

ciation. Mr. Gilmore served as secretary of the national association during the greater part of 1923 and due to that connection is widely known by the jobbing trade throughout the Middle West. Previously, Mr. Gilmore was actively engaged in the oil business.

The following officers of the Michigan Association have been selected to serve during the year 1924: H. H. Ragle, president; C. A. Shierson, vice president; P. R. Kempf, secretary; F. S. Grimes, treasurer; board of directors, F. Francis, C. J. Raths, J. F. Staebler, J. J. Thiesen, R. L. Davenport, W. C. Vandenberg and H. H. Ragle.

CATALYTIC METHODS IN THE OIL INDUSTRY

Catalysis enters so largely into chemical industry at the present time that it can be stated with some confidence says the London Petroleum Times, that the majority of chemical manufactures employ catalysis in some form in one or more stages of their operations. Different catalysts and different methods of applying the catalytic principle in the petroleum industry are the subjects of scores of patent specifications, and is typically represented to the McAfee process of cracking heavy petroleum oils, in which alum'num chloride is the catalytic agent. The Bergius process of hydrogenating heavy petroleum fractions, coal, etc., is said not to be a catalytic one, but this statement ignores the fact that the incombustible parts of these substances are rich in catalytic agents. The same applies to the process described by M. Kling and his associates at a recent meeting of the Societe Industrielle in Paris. In this case it has been found that powdered coal suspended in a liquid hydrocarbon (obtained from a previous operation of the process) and subjected to a high pressure of hydrogen at a temperature of 400 to 450 degrees C. is entirely dissolved. The net result of experiment was said to be a yield of 10 per cent gas of very high calorific value, 30 per cent of light oil, 30 per cent of heavier oil suitable for Diesel engine fuel, and 30 per cent of heavy oils. This achievement appears to make the process the most hopeful of all the processes of this character, but doubtless there are many difficulties to be overcome before the idea can be used commercially.

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Pipe Tool Maker to the American Plumber and Steamfitter

George Washington
Never told a lie

History fails to call attention to the fact, however, that George never played golf, and never filled out an income tax statement;

Likewise, he married rather late in life and a widow at that, so it wouldn't have been much use to try it anyway;

Also, if he liked his liquor, (we don't say he did or he didn't) the ways of getting it were not as devious in those days as they are said to be now;

Neither was competition as fierce in those days. Honestly, sometimes we almost forgive some of our competitors some of the things they say about us.

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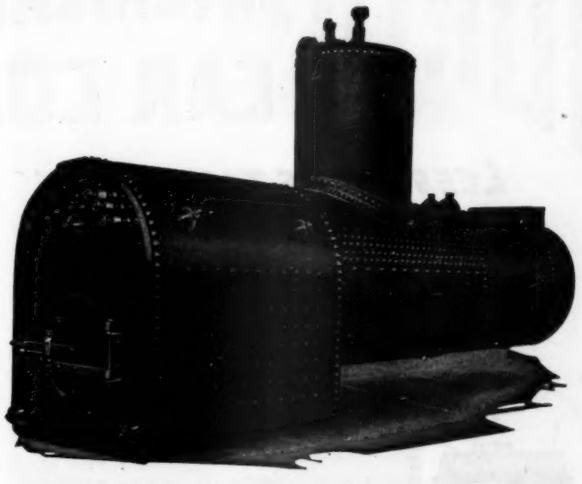

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TANK CAR REPAIRS—STEEL PLATE WORK

142

New Jersey Company Report Shows Effect Of Overproduction

The Standard Oil Co. of New Jersey earned its common and preferred dividends in 1923 with a moderate balance to be carried to surplus, according to George H. Jones, vice president in charge of finances, at a meeting of company executives. Mr. Jones outlined the scope of New Jersey's world activities in oil as well as making a resume of general oil trade condition in 1923.

The company's 1923 business volume was the largest in its history, he said. While pronounced competition resulted from overproduction of crude and refined oil, and in many instances the sale of products did not bring a new dollar for an old one, the company did fairly well under conditions.

Mr. Jones pointed out that the production of crude in the United States last year of 743,000,000 barrels was 33 per cent above 1922, while world's output of 1,011,000,000 barrels was 18 per cent above 1922. Contrasted with this, crude production of New Jersey and subsidiaries domestic and foreign increased 59 per cent in 1923.

Transportation Operations

The tank steamer fleet of Standard Oil of N. J. proper, 48 tankers of 544,000 deadweight tons is the largest privately owned fleet flying the American flag and according to Mr. Jones, was actively engaged in 1923 transporting crude oil from California, Mexico and Gulf ports to Atlantic seaboard refineries. Including subsidiaries' ships, aggregating 353,000 tons, New Jersey's fleet totals 897,000 tons. Adding 21 tankers of 203,000 deadweight tons under charter, New Jersey was operating a fleet aggregating 1,100,000 deadweight tons the end of 1923.

These ships represented one-seventh of the world's total tank steamer tonnage of 7,725,000 deadweight tons.

Fleet and ships under charter transported 58,106,000 barrels of crude and 18,381,000 barrels of refined oils during 1923, a combined total of 79,989,000 barrels of oil.

Big receipts of California crude by ships curtailed operations of Tuscarora Pipe Line, which runs east from Ohio to Bayonne, causing it to suspend dividends for the first time. Lines of Oklahoma Pipe Line Co. and S. O. of Louisiana, both subsidiaries, were more active. In Oklahoma 302 miles of pipe were laid; in Louisiana and Arkansas 203 miles and in Texas, Humble Oil laid 252 miles.

Refinery Operations

Mr. Jones stated that refineries suffered considerable loss, due to inventory depreciation. In the last half of 1923 they consumed crude which cost more than was obtained for refined products. However, aggregate refinery operations were 20 per cent greater than in 1922.

While the country's stocks of crude oil gained 33⅓ per cent, to 379,000,000 barrels, in 1923, New Jersey's stored crude in United States increased 16 per cent over 1922 and its proportion of total domestic stocks declined 2 per cent.

Domestic stocks of other than crude oil (finished and semi-finished oils), increased 22 per cent to 106,000,000 barrels last year. New Jersey's stocks of this type decreased 7 per cent and its proportion of total for the country declined 6 per cent.

Gasoline Stocks

"The stocks of finished gasoline on January 1, 1924, in the United States," Mr. Jones said, "were 24,999,000 barrels (42 gallons each), and on January 1, 1923, 21,034,000 barrels, an increase of 19 per cent. Our stocks of finished gasoline in the United States at the end of 1923 had increased 8 per cent for the year. Our proportion of the total stocks of finished gasoline declined 2 per cent."

New Jersey's domestic sales of all refined products gained 30 per cent in 1923 over 1922. Sales of "Nujol" in-

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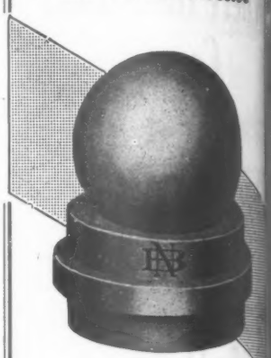

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National Refining Co.
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creased 20 per cent and synthetic alcohol 82 per cent over 1922.

The country's production of natural gasoline from gas wells and casinghead gas from oil wells was 21,990,000 barrels contrasted with 12,044,000 barrels in 1922, a gain of 83 per cent. New Jersey's production of casinghead gasoline was 1,338,000 barrels, 28.35 per cent gain, while its natural gas companies produced 566,000 barrels.

As a sidelight on country's gasoline consumption Mr. Jones stated there were 16,000,000 automobiles and trucks in the world, 85 per cent of which are in this country; that production this year is estimated at 4,000,000 cars and trucks of which one-half are to replace those worn out.

Export Business

Stating that exports of petroleum products of 98,261,000 barrels in 1923 were 35 per cent greater than 1922, Mr. Jones said the New Jersey company's exports gained 26 per cent in 1923. He added: "Conditions affecting our business generally in the foreign markets have shown a material improvement."

In regard to refinery practices, the company started 1922 with a new cracking process of its own, but also was the "unfortunate possessor of $20,000,000 worth of Burton stills, which more than sufficed for our needs." He added: "We were in the same fix as a man wearing a rented suit of clothes, with a new suit of his own in his hand, but no place to make the change. At the same time the patent situation was very complex. The past year brought us a satisfactory settlement of all these difficulties."

Mr. Jones discussed sickness and benefit payments to employes which cost $1,833,000 in 1923. This represented 2 cents a barrel on oil run to refineries, he said.

Stockholders

New Jersey's refineries and subsidiaries in this country employed an average of 36,641 regular employes last year with a total payroll of $62,425,000.

As of January 1, last, it had 20,084,000 shares of common issue of which only 138,991 shares, 7-10ths of 1 per cent, were owned outside the United States. Common stockholders numbered 25,634, compared with 14,111 a year previous. The same date there were 39,643 preferred holders, making total stockholders of 65,277 shareholders. At dissolution, in 1912, there were 6,078 holders. Shareholders at the end of 1923 included 31,195 women, most of them holders of preferred, and 30,022 men, the latter predominating in common holders.

This number did not include 12,928 subscribers to employes' stock acquisition plan under which 408,431 common shares were held for subscribers. Total subscriptions to this fund were $15,139,000 of which employes subscribed $9,915,000 and the company one-half amount subscribed by employes. Withdrawal accruals aggregated $745,911, equal to 8 per cent of employes' subscription, which go to general benefit of subscribers.

"The present plan will terminate on December 31, 1925," Mr. Jones said, "at which time it is estimated that there will be credits in excess of $25,000,000 and 650,000 shares of stock will have been apportioned. It is hoped that some similar plan may then be adopted for at least another term of five years."

SULPHITE SPIRIT MOTOR FUEL

Sveriges Industrifoerbund, in a letter to the Ministry of Commerce, Stockholm, emphasizes the necessity of finding a solution of the problem of using sulphite spirit as motor fuel, in order to keep the sulphite mills running and to improve the commercial balance of the country by the exploitation of waste products of the timber and pulp industries. The Foerbund proposes the imposition of higher import duties on benzine and the introduction of other measures for the purpose of obliging consumers to use, at least, a mixture of benzine and spirit.

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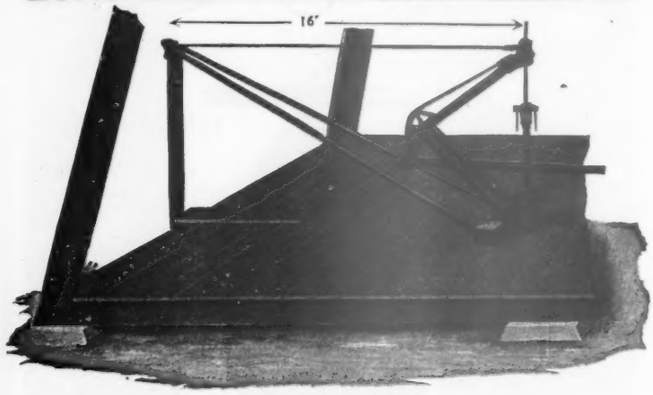

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CHAIRMEN APPOINTED FOR SAFETY MEETINGS

As one of the steps to promote safety for oil field workers, the Petroleum Safety Council of the Mid-Continent Oil & Gas Association, is showing motion pictures, depicting safety measures which should be adopted by all workmen as a measure for protecting their own lives and those of their fellow workmen.

Representatives of the Petroleum Safety Council of the Mid-Continent Oil & Gas Association have spent several weeks in taking pictures in all parts of the Mid-Continent area and perparing the film. Every phase of the oil business is given attention, with particular stress upon the production work.

Following is the Oklahoma schedule to be followed by the exhibitors, together with a list of the committeemen appointed at the various points and the date for the exhibitions:

Pawhuska, March 20.—Chairman, D. H. Dougherty, Black, Sivalls & Bryson; B. Barlow, with A. W. Landon; O. L. Price, Indian Territory Illuminating Oil Co.; and Burel Barlow, Foster & Davis, Inc.

Barnsdall, March 21.—Chairman, Charles Murray, Indian Territory Illuminating Oil Co.; Leonard Loop, Devonian Oil Co.; W. R. Downey, White Eagle Oil & Refining Co.; and R. G. Golden, Barnsdall Oil Co.

Shidler, March 22.—Chairman, W. S. Dewey, Sinclair Oil & Gas Co.; W. L. McCormick, Gypsy Oil Co.; E. P. Lee, Devonian Oil Co., and D. H. McCarthy, Prairie Oil & Gas Co.

DeNoya, March 24.—Chairman, Earl McBride, Roxana Petroleum Corp.; W. R. Darling, Tidal Oil & Refining Co., and T. A. Hall, Tidal Oil & Refining Co.

Ponca City, March 26.—Chairman, Ray E. Miller, Marland Oil Co.; A. E. Fisher, Waite Phillips Co., and J. D. Porter, Indian Territory Illuminating Oil Co.

Tonkawa, March 27.—Chairman, Mr. White, Producers Lumber Co.; P. E. Shoemaker, Amerada Petroleum Corp.; W. S. McKibben, Phillips Petroleum Co., and John Lane, Lane & Wasson Co.

Three Sands, March 28.—Chairman, I. J. Leslie, Enid Oil & Pipe Line Co.; W. A. Wallace, Pennok Oil Co., and Ray Miller, Marland Oil Co.

Garber, March 29.—Chairman, J. B. Oakley, Roxana Petroleum Corp.; Shade Young, Tidal Refining Co.; William Hackler, D. W. Franchot & Co., and C. E. Turner, Sinclair Oil & Gas Co.

Enid, March 31.—Chairman, P. E. Slater, Champlin Refining Co.; Clyde Pulse, Haley, Garber & Pulse; Edgar Kraus, Atlantic Oil Producing Co., and H. E. Southard, Enid Oil & Pipe Line Co.

Tulsa, April 1.—Chairman, H. A. Boggess, Sinclair Companies; J. D. Iams, Gypsy Oil Co.; J. A. Wolfe, Prairie Oil & Gas Co., and G. H. Hannum, Cosden Oil & Gas Co.

West Tulsa, April 2.—Chairman, G. H. Hannum, Cosden Oil & Gas Co.; J. D. Iams, Gypsy Oil Co.; J. A. Wolfe, Prairie Oil & Gas Co., and H. W. Boggess, Sinclair Companies.

Skiatook, April 3.—Chairman, F. G. Pownall, Prairie Oil & Gas Co., J. M. Pytle, Wolverine Petroleum Corp., and E. R. Black, Sinclair Oil & Gas Co.

Bartlesville, April 4.—Chairman, G. H. Hornstein, Phillips Petroleum Co., Clay Briggs, Empire Companies, Edward Schnell, of H. V. Foster; J. W. Chinn, The Wiser Oil Co., and J. W. McBride, Frick-Reid Supply Co.

Dewey, April 5.—Chairman, Charles M. McCarthy, Prairie Oil & Gas Co., Charles C. Jack, Foster & Davis Co., and S. L. Watt, The Wiser Oil Co.

Nowata, April 7.—Chairman, Charles Fasholts, Noble Oil & Gas Co.; M. A. Dunn, Phillips & Milan, and Harry Hutchinson, Sinclair Oil & Refining Co.

Jenks, April 9.—Chairman, H. O. Purkapile, Prairie Oil & Gas Co.; Lem Hunter, Thomas T. Curtis, and E. A. Moss, Brady, Swanson & Kelley.

Bixby, April 10.—Chairman, B. F.

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Butler, Magnolia Petroleum Co., George W. Heldreth, Kewanee Oil & Gas Co., and Bate Mann, Selby Oil & Gas Co.

Haskell, April 11.—Chairman, W. M. Groover, New England Oil & Pipe Line Co.; Leo F. Cragg, Roxana Petroleum Corp., and Charles Ginrich, Tidal Oil & Refining Co.

Muskogee, April 12.—Chairman, F. R. McKee, Transcontinental Oil Co.; Charles Sills, Tidal Oil & Refining Co.; C. D. Coffin, Paraffin & Reliance Co., and D. J. Kennedy, Prairie Oil & Gas Co.

Boynton, April 14.—Chairman, L. C. Johnson, Oklahoma Producers & Refiners Corp., and J. R. Barrott, Transcontinental Oil Co.

Okmulgee, April 15.—Chairman, George Davidson, Waite Phillips Co.; M. L. Hayes, Selby Oil & Gas Co.; A. E. White, Cosden Pipe Line Co., and R. H. Kiser, Henry & Avers.

Henryetta, April 16.—Chairman, E. H. Kelley, O'Neil Petroleum Co.; John Gilbert, Waite Phillips Co., and R. E. Swift, Henry Oil Co.

Sapulpa, April 17.—Chairman, Guy Smith, The Wiser Oil Co.; O. A. Rinehart, Skelly Oil Co.; W. H. Bettes, Gypsy Oil Co., and W. H. Passnaters, W. H. Passnaters.

Keifer, April 18.—Chairman, A. W. Smith, Tidal Oil Co.; J. G. Pope, Paraffin & Reliance Co., and W. H. Barnhart, D. W. Franchot & Co.

Bristow, April 19.—Chairman, C. G. Welder, Gypsy Oil Co.; W. S. Partner, Sinclair Pipe Line Co.; L. L. Brooks, Black, Sivalls & Bryson, and F. J. Snyder, Skelly Oil Co.

Depew, April 21.—Chairman, W. B. Rhees, Prairie Oil & Gas Co.; George Weible, of Thomas T. Curtis, and Mr. Reed, Producers Lumber Co.

Ardmore, April 23.—Chairman, R. W. Kirkpatrick, Carter Oil Co.; Ralph Dillenback, Gypsy Oil Co., and A. J. Walker, Westheimer & Daube.

Wilson, April 24.—Chairman, B. W. Kirkpatrick, Carter Oil Co.; W. S. Kahl, Shaner Drilling Co.; J. A. Schoffstall, Tidal Oil & Refining Co.; George Reynolds, Carter Oil Co., and W. B. Austin. Lane & Wasson Co.

Wirt, April 25.—Chairman, J. W. Saverline, The Twin State Oil Co.; C. R. Farren, Skelly Oil Co.; W. H. Davidson, Gilmer Oil Co.; Floyd Marty, Imperial Refining Co., and J. G. Smith, Sinclair Oil & Gas Co.

Graham, April 26.—Chairman, D. L. Dunn, Magnolia Petroleum Co., and J. H. Longabaugh, Black, Sivalls & Bryson.

Duncan, April 28.—Chairman, L. S. Ransford, Amerada Petroleum Corp.; H. Gloeckler, of Erle P. Halliburton; D. L. Smith, Skelly Oil Co., and W. B. Douthitt, Safety First Oil & Gas Co.

Lawton, April 30.—Chairman, G. B. Long, Gypsy Oil Co., and John W. McKee, Whole Back Producing Co.

ANGLO-MEXICAN DEAL HALTS

NEW YORK, March 15.—The project for a $25,000,000 loan to the Mexican Government through the Wolvin Co. and the British-American Tobacco Co. is at the point of failure, according to the Excelsior of Mexico City, which says the speech of Lord Parmoor, Lord President of the Council, in the British House of Lords caused American bankers to cable instructions to suspend the negotiations. Ex-Senator James Hamilton Lewis is on his way to the United States to try to repair the damage. The project called for the loan in exchange for concessions of large tracts of lands with mineral and oil rights. The Wolvin Co., confident that the concessions will be granted, has made plans for the construction of a canal and will submit them to contractors within a few days.

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The "Petit Parisien" announces that searches made to discover petroleum in Madagascar have been crowned with success. The oil is not in liquid form, but bituminous deposits exist in abundance, and it is possible to extract oil from them.

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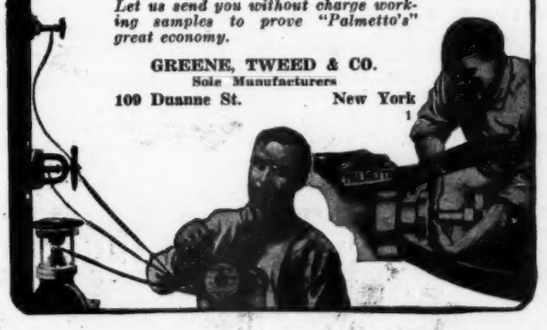

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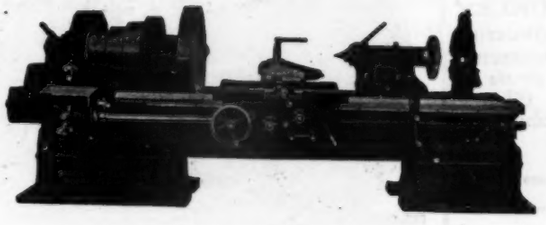

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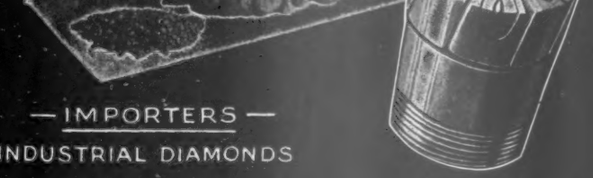

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Texas Co. Operations In Rocky Mountains, Craig Well Problems

The light oil well completed in Colorado by The Texas Co. on land owned jointly with Transcontinental Oil, which made 4,800 barrels of 41 gravity crude oil in a day test flow, is of considerable importance, aside from the possibility of a substantial producing pool. Its additional importance lies in the fact that for the past few years The Texas Co. has been establishing itself in the Rocky Mountain district. The facilities developed so far include a 6,000-barrel refinery at Casper, Wyo., a half interest in the Williams pipe line to Salt Creek Field and some production in that district.

The well was drilled on a tract owned jointly by The Texas Co. and Transcontinental Oil, the latter having charge of development work. The joint holdings total 1,200 acres, while The Texas Co. holds 2,800 additional acres in and around the dome. The well is slightly more than 3,800 feet deep and cost approximately $40 000. It was drilled 20 feet in the sand and flowed for a full day, making 4,800 barrels of clean oil.

For the present it is shut in because available storage is filled. The next step in development work will be to drill additional wells, as soon as weather conditions permit, to prove up the property.

The refinery and pipe line work in Wyoming were taken up so that The Texas Co. could market advantageously in the markets contiguous to the Wyoming fields instead of serving refined products from its Casper plant or through purchasers from small refineries in the West.

Should a sizeable production be developed at Hamilton Dome it would doubtless be followed by a pipe line installation to bring the crude to refinery points in Wyoming. Situated 16 miles from a railroad, it is not likely the company will go in for laying a spur pipe line to the railroad and installing loading racks to move the crude out by cars. Transportation will wait on the further development of production and should it prove sufficiently large, a pipe line will probably be laid to Rawlins, Wyo., or perhaps to Casper. The former point is about 125 miles distant from the well, on the Union Pacific Railroad, with ample facilities for moving refined products. It might be that The Texas Co. will decide to put a refinery at Rawlins.

At Rawlins, too, is located the Producers & Refiners Corp.'s plant which now gets its crude from Salt Creek, about 130 miles away. An interchange of The Texas Co.'s Colorado crude at Rawlins for Producers & Refiners' crude at Salt Creek might prove a satisfactory way to handle the oil.

A pipe line from Hamilton Dome to The Texas Co.'s refinery at Casper would be a matter of approximately 200 miles. Such a line would require the presence of substantial production in the new district before it could be laid. Expansion of the Casper refinery to double its present capacity could be made without spending as much money as on the present capacity.

How Congress Came To Pass Leasing Law On Public Oil Land

The leasing of oil and mineral bearing lands, other than those in the naval reserves was provided for in the Mineral Leasing Act, which became a law February 25, 1920, after Congress had tried for 10 years to adopt a suitable leasing law.

The law, as finally passed, included coal, oil and other minerals. The leasing of public lands bearing such minerals was put into the hands of the Secretary of the Interior. To oil prospectors the Secretary was empowered to grant permits for prospecting up to 2,560 acres, but after land had been proven to be oil bearing he could grant a lease

Shooting Removes Paraffin From Oil Wells

The U. S. Bureau of Mines has made preliminary investigation into removal of paraffin from oil wells and has found that the most efficient method is by ordinary shooting, using small diameter shells.

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including a maximum of 640 acres on a prescribed royalty basis.

The bill was opposed by extreme conservationists, such as Gifford Pinchot, and Senator La Follette spoke against it at great length. However, Secretary of the Navy Daniels, while apparently not entirely satisfied with the bill, believed it did protect the naval reserves.

The mineral leasing bill was written in the Senate Public Lands Committee during the first session of the 66th Congress. It passed the Senate late on the day of September 3, 1919, without a record vote.

The bill passed the house with amendments on October 30, 1919. The vote was 169 to 39 but it was not an aye and nay vote. Just before the final house vote a motion to recommit the bill lost by 201 to 44.

On February 10, 1920, the house adopted the conference report on the measure with but little debate and on the next day the senate adopted the report with still less debate. Under the bill the leasing of naval reserves was prevented.

However, in the Naval appropriations bill which was enacted on June 4, 1920, there was a rider giving the Secretary of the Navy very broad powers over the reserves. The rider was proposed in the Senate Naval Affairs committee after the naval bill had passed the house. The rider first came up in the senate April 27, 1920. At the request of Senator Lodge it went over until next day when it was adopted after some amendments had been proposed by Senator Smoot of Utah and adopted. The house conferees agreed to the proposal and the house approved it May 31, 1920. There was no record vote on the provision in either house or senate.

The rider gave the secretary of the Navy power to take possession of all properties within the naval reserves to conserve, develop, use and operate. Also he could, directly or by contract, lease, use, store, exchange or otherwise dispose of oil and gas products of the reserve.

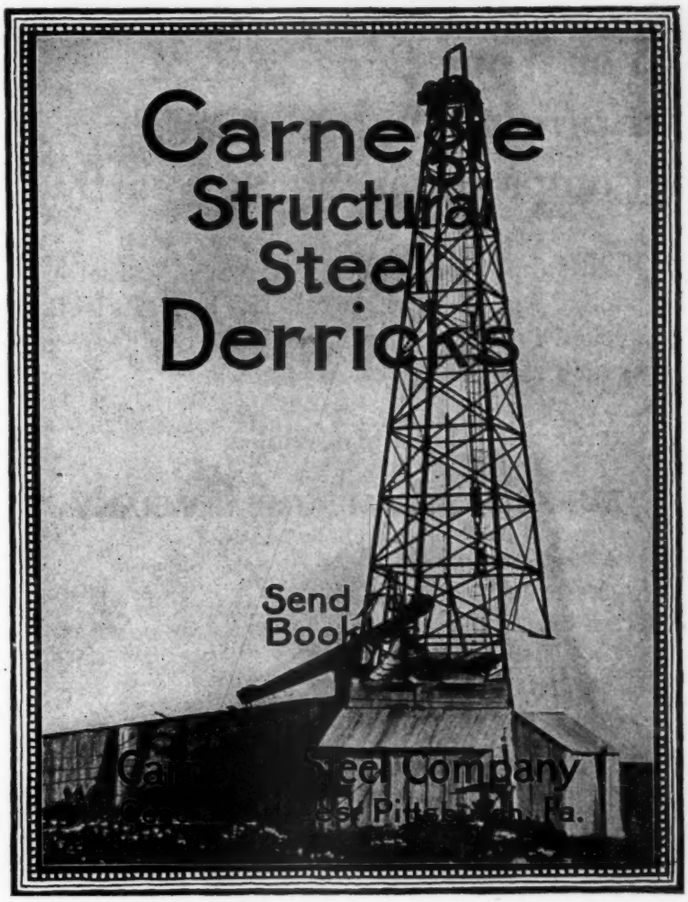
The situation then was that the Interior Department controlled oil bearing public lands outside the naval reserves, but the Navy Department controlled the reserves. The debate shows that the present situation was unforeseen, for the senate speeches dealt with the possible lack of oil for the Navy and merchant marine and the contest for world control of oil, which was discussed at length by former Senator Phelan of California.

Soon after the Harding administration came into office Secretary Denby and former Secretary Fall agreed to transfer the control of the naval reserves from the Navy to the Interior Department. Secretary Denby has justified this step by the statement that the machinery for leasing was in the Interior Department. An executive order, on the legality of which the fate of the leases may depend, was drawn and promulgated by President Harding and Secretary Fall then proceeded to make the leases to Doheny and Sinclair.

If the naval reserves had been controlled by the Mineral Leasing law, Secretary Fall would have been restricted as to the number of acres he could have leased. When he received the sweeping powers which Congress granted to the Secretary of the Navy he was limited by almost no restrictions.

UNION OIL DIRECTOR

LOS ANGELES, Cal., March 15.—R. J. Keown, treasurer of Union Oil Co. of California since 1918, has been elected a director to succeed J. E. Fishburn, resigned. Officers were reelected. Union Oil does not confirm the reports from Casper, Wyo., that oil showings of value had been found in the second wildcat well the company is drilling in Colorado, 3 miles north of Ft. Collins and 8 miles south of the discovery well on Wellington Dome. Gas has been encountered and some traces of oil, the latter far from commercial value and giving no conclusive evidence of the outcome of drilling. Last reports gave depth of the hole as 1,341 feet.



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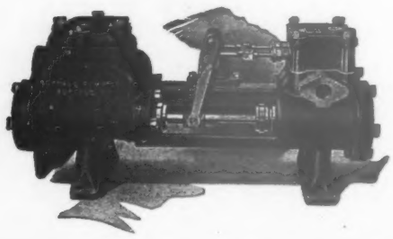

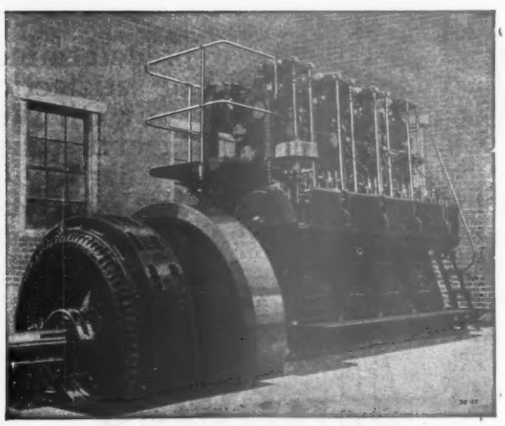

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TO INSTRUCT PUBLIC IN INDUSTRIAL FACTS

One of the biggest needs of all industry today, and of the oil industry especially, is a general understanding of the fundamentals of economics, according to A. J. Beatty, of the American Rolling Mill Co., chairman of the committee on economics for employes, of the American Management Association. A report on the progress of instruction in economics for workers, prepared by this committee, defines economics as the fundamental laws of production, transportation, marketing and distribution.

"There is an unwillingness to get together to talk things over," says the report, "to see from the other fellows' standpoint. This getting together, talking things over and seeing the others fellows' view is the essential first step toward putting economic laws into effective operation. This is the great task of this association, to induce management and workers to get together, to tell all the truth, to face facts, and to solve mutual problems. This would be effective economics."

There are two reasons why the general public has never learned even the rudiments of economics, according to the report. One is that the subject has always been strictly academic, and the other is that the terminology, or vocabulary, of the technical economist has always been so technical that it was largely Greek to the average business man.

The committee finds that many industrial concerns recognize this fact and are giving courses of instruction designed for the man in the street.

NEW OIL CAPITAL

The capital investment in new petroleum companies in the month of February totaled $56,095,000 for the 48 companies which were formed during the month. This compares with 46 corporations chartered in January, with an aggregate capitalization of $127,728,000, and 35 in December with a total capitalization of $170,286,000. Outstanding among the new concerns are the Oklahoma Oil Corp., which was incorporated in Delaware with a capitalization of $12,500,000, and the McCorkle Pipe Line Co., also incorporated in Delaware and capitalized at $10,000,000.

HUNGARIAN REFINERIES

The Hungarian Oil Refineries Board has informed the Ministers of Commerce and Finance that it has been obliged to break off the negotiations which were begun with the Russian Government last December to insure the necessary supplies of naphtha, owing to the Hungarian Government having refused it the tariff help it asked for. When the present stocks of naphtha are exhausted, the refineries will be obliged to close down, or, at any rate, to restrict their operations.

PRIZER CHAIRMAN OF VACUUM

Edward Prizer has been made chairman of the board of Vacuum Oil Co., being succeeded as president by George P. Whaley. Charles E. Bedford is first vice president, Walter M. McGee second vice president and Charles E. Arnott third vice president.

BOTTLE OF BENZINE THROWN AT PREMIER IN GASOLINE ROW

The opening of the session of the Czechoslovakian Parliament began with stormy scenes and cries of "Corruption! Corruption!" from the left benches in connection with the recent gasoline and wood alcohol graft. One Communist threw a bottle filled with benzine at the Premier.

TANKS!

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BRITISH CO. BOUGHT IN VENEZUELA FIELD

The Lago Petroleum Co., recently organized by American oil interests to develop oil properties in Venezuela, has acquired the British Equatorial Oil Co., one of the British companies operating in Venezuela.

Acquisition of the British Equatorial has been authorized by the directors of the Lago Co. Lago stock will be increased from an authorized issue of 2,500,000 shares to 4,000,000.

Frederick W. Baker, chairman of the British Equatorial Oil Co., has been elected chairman of the Lago Petroleum Corp. Thomas Ford, managing director of Tankers, Ltd., and John Hatfield, also director of Tankers, Ltd., have been elected directors of the Lago Petroleum Corp., representing the new British interests. Ford and Hatfield are both directors of the British Equatorial Co.

The Lago Corp., before the British Equatorial purchases, controlled 2,300,000 acres in Venezuela, one concession covering the bed of Lake Maracaibo. British Equatorial Co. brings to it an additional 250,000 acres, 25,000 acres of which are known as the maritime government reserve zones on both sides of Lake Maracaibo. Properties of the British Equatorial Co. adjoin the Lago concessions.

ONE BRITON IN 43 HAS AN AUTOMOBILE

The British at the end of 1923 had one motor vehicle for every 43 inhabitants against America's one for every seven. In 1922 there was one motor vehicle for every 49 persons and in 1921 one for every 52. Production of passenger cars in 1923 was 65,000, an increase of 25 per cent over 1922. Trucks produced numbered 25,000, an increase of 25 per cent and motor cycles 45,000, an increase of 28.6 per cent. Cars, including taxis, numbered 460,896 against 366,003 in 1922; trucks were 181,235, against 158,856 and motorcycles were 391,087 against 352,340.

The nature of the British motor market is characterized by the high number of motor cycles licensed, 85 per cent as many as of cars. High taxation and expensive petrol explain the preference of the buyer with moderate income for this type, though a well equipped cycle costs more than a Ford. The cycle is even more popular in the country districts than the small car. The Ford is handicapped by high horsepower taxation and larger petrol consumption.

TWO CRACKING UNITS ADDED TO PONCA CITY

The construction of two cracking units at Ponca City has been announced by the Empire companies. The units will be installed in connection with the Empire refinery at Ponca City. The cracking units to be installed will be located east of the refinery property and along Third street. The two units will consist of two cracking, separating and concentrating chambers, five furnaces, three stacks and one relief cooler. The installation also will necessitate a combined pump and receiving house, cooling tower, run tanks and additional auxiliary buildings.

The construction of the unit at Ponca City, it is believed, will be completed by June 1. A large number of workmen have been put to work installing the units and the construction work has been started.

OIL CO. REMOVES BILLBOARDS

SAN FRANCISCO, March 17.—Nearly 1,200 highway billboard advertisements of the Standard Oil Co. of California, in Oregon, Washington, Nevada, Arizona, and California, will be removed and the corporation will erect no more such signs on highways, it was announced at company offices here. "The company feels that the splendid scenery should be unmarred," it stated.

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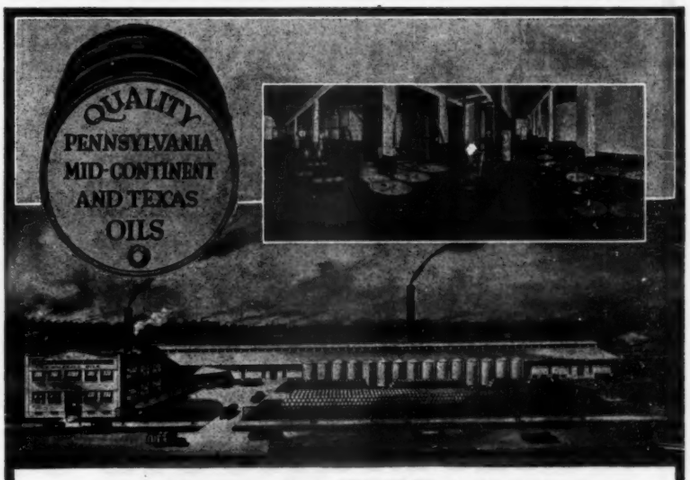

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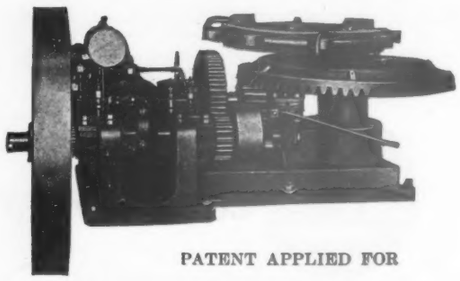

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Earthquake in Japan With Effect on Oil Is Described Vividly

A description of the disastrous earthquake suffered in Japan last September and the effect it had on the petroleum situation in the country is contained in the current issue of the "Petroleum Times," a Japanese publication published in Tokio. The account follows in verbatim:

Earthquake and Gasoline

"All of sudden, Tokyo, Yokohama, Yokosuka, and the surrounding country suffered, on the first day of accursed September, a series of the severest earthquake shocks ever on record, followed by widespread fires. Japan is a land of earthquake as many scientists coldly say, but of all earthquakes that have been experienced by human being, none has been severer than and none has caused so many deaths and so much havoc as that of 1st September. Over 800,000 houses have been destroyed and nearly 200,000 persons have been killed.

"The supply of food and water have been cut off, and the surviving mortals were half-starved. All railway, street car, lighting and water navigation systems have been severely damaged, many stations and bridges have been burnt down and almost every communication by telegram, telephone and mail has been totally disorganized.

"Many thousands of refugees, gathering in the vacant places of Uyeno, Hibiya, Shiba and other such parks and in the esplanades of Akasaka and the Imperial palaces, had to pass a terror-stricken night under the strangely burning sky and the streets were full of fear. Crowds continued to flow in these places and the most wretched tragedy, which anyone cannot recall without tears, was that 32,565 men and women, who sought to escape from a fiery death by entering into more spacious place, were burnt all together in the large vacant place of the Military Clothing Department, Honjo.

"The Japanese Government as well as all citizens were boldly facing many gigantic problems arising out of the greatest disaster in the history of the world and the automobiles, trucks and airplanes were then their last hope by which alone they could save their brothers. And these machines, which valued next to human life in the time of tragedy, if not gasoline, cannot move a step.

"To make the matters worse, at first shock of the earthquake, the great oil tanks on the hillside of Yokosuka exploded, and millions of tons of oil swept down upon the sea, turning the harbor into a mass of flames and all depots and tanks of foreign oil companies in Yokohama and Narihira depot of Nippon Oil Co. as well as majority of gasoline stocks in the cities have been burnt, and 10,000 cases remained safe in Sumida depot of Nippon Oil Co. was the unique gasoline by which we had to meet the emergency.

"Officials of Nippon Oil Co., consulting with the authorities, had not lost a single moment to make the decisive action to save the difficult situation by supplying this gasoline, but as it was too small to meet the demand, the most important problem how we can get sufficient complement was solved only by transporting from Akita and Echigo under opportune permission by the authorities that provisions for machines are treated same as provisions for people.

"To make sure the gasoline supply, the Imperial ordinance was promulgated by which many necessities of life as well as building materials are exempted from import duty until 31st March next and under this ordinance, import duty for 'Mineral oils, specific gravity at 15 degrees C. not exceeding 0.730 and not otherwise mentioned under 112' was abolished until that date.

"Though the petroleum industry in Japan could not escape from the severe damage by this disaster, main producing and refining centres in Echigo and Akita

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were not much, if at all, affected and if the firm resolution of the entire Japanese people to go bravely through this unprecedented national trial can be realized, it is needless to say that the petroleum industry will see its doubled prosperity.

Glance at Japanese Oil Market

"The petroleum trade of Japan is rapidly recovering from the after-effects of the severest earthquake on record and the subsequent fires of 1st September destroying 11,000,000 yen properties and killing more than 200,000 lives. And the temporary shortage of products of crude petroleum has now been practically overcome, price being almost normal, though the poor means of conveyance has kept the consumers of some localities barely supplied.

"While some business men, without an adequate knowledge and understanding about the oil business, imported too much gasoline to be freely sold up and demoralized the market in many business centres and chaos has reigned oil business during the weeks not out of the earthquake disaster but from these reckless ventures. But the continued weak exchange of Japanese money and reduced price of gasoline made such an import quite impossible for the time being. Besides, with the beginning of this month (January) 1,000 motor busses have begun to be in service under the management of Tokio municipal electric bureau, to mitigate the bustle of city car at the rush hour and all these facts, together with the prospect of increased gasoline consumption in 1924, have made the psychology of oil men a little brighter.

"But as there is no particular heavy demand for kerosene and other oils, though the consumption is about up to the season, no change in price has recorded and, in general, any other kinds of products than machine oil, have begun to be delivered to buyers fairly well lately and as there is no sign of encouraging features particularly, the market is rather soft in tone."

GRAVITY GATHERING SYSTEM FOR HEWITT

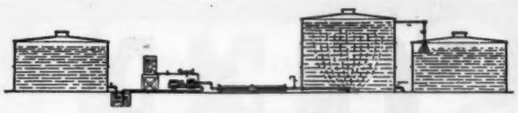
BARTLESVILLE, Okla., March 17.—Due to the increased amount of crude oil being purchased in the Hewitt Field, Carter County, Oklahoma, the Empire Pipe Line Co., has arranged to install a gravity gathering system in this territory. The addition requires the construction of a pump station in or near the field with the elevation below the leases from which crude is to be taken.

The gravity system allows the oil to flow from the various leases to the pump station and from this point it is moved under pressure to its destination. The gravity system, which will be installed in the Hewitt Field, will call for the construction of 5 or 6 miles of 4-inch pipe line and considerable smaller pipe in addition to tank and pump station. Work on this project will start immediately.

The Empire Pipe Line Co. has completed the construction of a 4-inch pipe line from the Graham to the Fox Field. This is about 5 miles in length and is an important link in the southern Oklahoma and Texas line system of the pipe line company.

OIL IN DUTCH COAL SEAMS?

A report has been submitted by Dr. Tesch, of the Netherlands Geological Survey, on boring operations during the past three years. Northward of the Ruhr region, in the area between Lichtenwoorde and Winterswijk, not far from the German frontier, seven coal seams were pierced within a depth of about 4,200 feet. During these operations, in the anhydrite strata of the dias formation, and also in the sandstone beds of the carbon, an impregnation with thin, volatile petroleum was encountered. From the drilling cores of this rock a thin, light-green oil trickled for several hours, and for some time after being broken up the cores emitted a pronounced bituminous odor.



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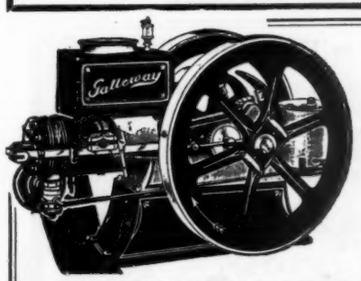

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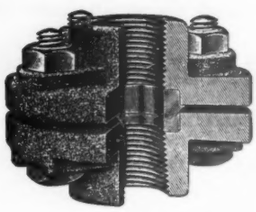

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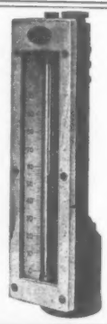

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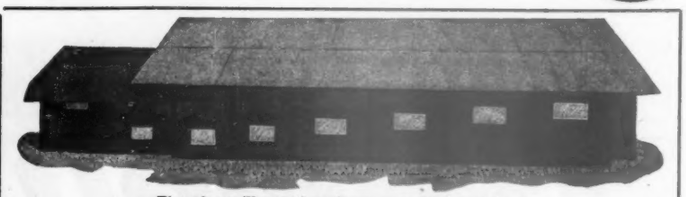

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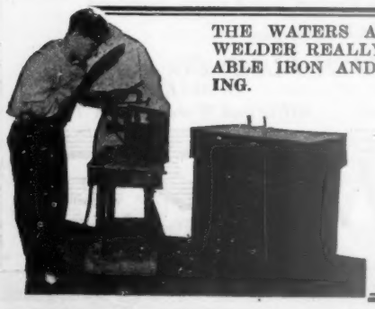

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FEARS RESTRICTIVE OIL LEGISLATION

LOS ANGELES, Cal., March 15.—The possibility of restrictive congressional legislation, as the result of the senatorial oil inquiry, is stressed by I. W. Fuqua, president of California Petroleum Corp. Mr. Fuqua directs attention to the fact that the oil industry as a whole is not involved in the matters now under investigation in Washington, although it may suffer more in the aggregate, perhaps, than the individuals directly concerned.

"Because of the constant flow of unusual and confusing problems peculiar to the industry," said Mr. Fuqua, "the oil business from its beginning has been the subject of violent and destructive attacks from extraneous influences, due largely to lack of complete knowledge and understanding of the risks involved in the discovery and production of oil. Maintenance of a proper price structure is essential to successful conduct of the business, which must be maintained on economic principles involving production costs, undeveloped but reasonably assured supply, settled production, regular and prospective consumption and accumulated stocks.

"The individual, corporate and general public interest has become so interrelated with the oil industry as to make it doubly important that every effort be made on the part of both producer and consumer to support an economic balance of petroleum products for consumption."

Mr. Fuqua takes issue with many critics of the oil inquiry who see an ulterior motive in the action of the senatorial committee, and points to the fact that many investigations made in the past have resulted in a clean bill of health, and declares a similar result may be expected from the present action so far as it applies to the oil industry as a whole.

"Waiving the theory that the Washington investigation is simply to create political capital," he concludes, "and assuming that it was and is necessary to clarify the oil business, it is to be hoped that the members of the investigating committee, together with the other members of Congress, will be as square and fair minded as business has been fair and above board, and will see that the oil industry is protected against restrictive and punitive legislative measures that will no doubt be attempted by those who are unfavorable to our constitutional principles of both government and industry."

CZECHOSLOVAKIA REFINERIES

The outlook for the domestic refineries in Czechoslovakia is said to be scarcely more favorable for the near future than it has been in the recent past. The refining capacity is largely in excess of the country's needs, and since the refineries are dependent on the importation of foreign petroleum for their supplies, they are in an unfavorable position to compete with foreign refiners. The protective tariff on foreign gasoline and other finished oil products results in high domestic prices, with a somewhat corresponding limitation of consumption, especially in the case of gasoline for automobiles. The importation of American crude oil or semimanufactured products for further refinement is now under discussion. With the slowly improving general industrial activity, there is prospect for an increasing sale for the qualities of American lubricating oils and greases which are not produced locally.

DIG DRAIN; SMELL OIL

A discovery of oil shale, which is exciting the French, has been accidentally made at Nancy. Workmen digging in preparation for the construction of a new drain, struck a bed of shale, giving off a strong smell of oil. The deposit was found to be seven yards deep, and was saturated with thick oil. The Faculty of Science is now carrying out research on the spot to ascertain the extent of the deposit and its commercial possibilities.

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OIL MEN'S REMEDY IS FRANK STATEMENT

LOS ANGELES, Cal., March 15.—Six hundred guests attended the annual Chamber of Mines and Oil meeting. A. C. McLaughlin, president of the chamber and vice president of Associated Oil, subsidiary of Pacific Oil Co., and A. L. Weil, attorney of General Petroleum Corp., were the principal speakers.

Mr. McLaughlin discussed Government vs. private control of industry. He showed how industry during the overproduction crisis last year successfully overcame what appeared an impossible situation by investing upward of 100,000,000 in tankage and equipment, while shipments out of the States for the year totaled 62,133,000 barrels of crude. After comparing methods employed by Congress and the industry itself, McLaughlin said: "It is unfortunate the unthinking public will be led astray by self-seeking politicians who assert that every move on the part of the industry to regain its healthy condition is an effort by the industry to make exorbitant profits at the expense of the public.

"As I see it, the only remedy for such a condition is a full and fair statement of what we are doing and how we are doing it, and an emphasis on the service that has been and is being rendered to the American people."

Mr. Weil's talk was an arraignment of the senatorial investigation, not because of the investigation being made but because of the long drawn out methods employed which, he said, have cast odium on the industry without accomplishing any results.

TRANSFER EQUIPMENT IN MEXICAN FIELDS

NEW YORK, March 15.—Reports from Tampico say excess pumps and boilers are being dismantled in the south field at several of the pump stations of the Mexican Petroleum Co., and extra flow lines are being taken up. This material is to be transferred to Cacalilao, in the heavy oil fields.

Due to revolutionary conditions, which have prevented the transfer of material, the company has been held up in the building of its pipe line from Ebano to the Tampico terminal. The right of way from Ebano to production in Lot No. 1, Cacalilao, has been cleared and the concrete work for a booster station half way between Ebano and Cacalilao has been put in. A 55,000-bbl. steel storage tank is being erected at well No. 2. The company has taken over the Kern Mex Oilfields, Ltd., site on the Panuco River at Caracol, where it will build loading racks which will be used for barging oil to Tampico pending the laying of the pipe line from that point to Tankville. It is expected that the flow line from production in Cacalilao to Caracol will be in operation April 15.

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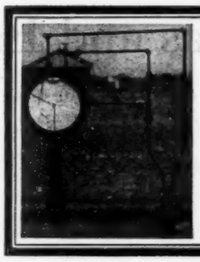

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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS PIPE LINE STATEMENT FOR JANUARY

Runs

	Month	Daily Av.
*Prairie Pipe Line Co.	3,265,000	105,000
Gulf Pipe Line Co.	1,013,773	32,702
Texas Pipe Line Co. of Oklahoma	510,002	16,452
Magnolia Petroleum Co.	890,983	28,741
Empire Pipe Line Co.	770,282	24,848
Cosden Pipe Line Co.	614,784	19,832
*Sinclair Pipe Line Co.	1,100,500	35,500
*Other lines	6,076,000	196,000
Total January	14,231,324	459,075
Total December	14,442,394	465,883
Difference	211,070	6,808

Shipments

†Prairie Pipe Line Co.	3,942,645	127,182
Gulf Pipe Line Co.	1,016,573	32,760
Texas Pipe Line Co. of Oklahoma	890,888	28,738
Magnolia Petroleum Co.	929,982	29,999
Empire Pipe Line Co.	835,478	26,951
Cosden Pipe Line Co.	794,782	25,638
†Sinclair Pipe Line Co.	2,333,117	75,262
*Other lines	5,425,000	175,000
Total January	16,167,466	521,530
Total Dec., revised	15,330,930	494,512
Difference	836,536	27,018

Stocks

*Prairie Oil & Gas Co.	21,800,000
Prairie Pipe Line Co.	1,750,000
Gulf Pipe Line Co. and Gypsy Oil Co.	9,045,842
The Texas Co.	7,529,632
Magnolia Petroleum Co.	8,256,327
Empire Pipe Line Co.	2,670,609
Cosden Pipe Line Co.	3,105,157
Sinclair Crude Oil Purchasing Co.	30,290,000
Carter Oil Co.	17,356,669
Other lines	8,000,000
Total January	109,804,236
Total December	110,559,038
Difference	654,802

*Estimated. †Includes shipments of Texas crude oil.

Note—Stocks do not include approximately 8,000,000 barrels of crude oil held in storage on private tank farms and leases.

Daily Average Runs

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for December and January:

	Dec., '23	Jan., '24
Nat. Transit	180,362.54	162,145.05
S. W. Pa. P. L.	79,157.04	75,867.98
Eureka P. L.	358,438.80	350,434.47
Buckeye P. L. (Macksburg)	257,274.06	237,151.15
Buckeye P. L. (Cleveland)	15,419.37	14,866.43
Buckeye P. L. (Lima, etc.)	129,881.77	110,313.18
Ind.ana P. L.	11,555.82	9,356.14
Cumberland P. L.	364,727.40	344,629.61
N. Y. Transit	15,691.83	15,265.52
Tidewater P. L.	144,463.97	129,856.05
Pure Oil P. L.	181,806.87	172,525.43
Emery P. L.	31,157.28	31,818.49
Indian Ref.	291,762.78	215,082.31
Paragon Dev.	45,532.28	34,719.69
Pittsburgh P L.	8,089.32	7,823.93
Swiss P. L.	.....	.....
Riggs Ref.	4,430.31	3,888.20
Union P. L.	24,988.93	23,508.87
Fords Br'k P. L.	602.48	631.72
Allegany P. L.	2,068.76	1,891.17
Total	2,147,413.61	1,941,775.28
Daily average	69,271.41	62,637.91

Note—Indian Refining Co. also reported other receipts of 121,549.13 bbls. Paragon Refining Co. had other receipts of 117,912.11 bbls. Paragon Development Co. had other receipts of 4,750.20 bbls.

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for December and January:

	Dec., '23	Jan., '24
Nat. Transit	421,334.69	426,619.09
S. W. Pa. P. L.	291,869.75	269,170.76
Eureka P. L.	125,610.81	129,413.00
Buckeye P. L. (Macksburg)	61,221.73	67,320.99
Buckeye P. L. (Cleveland)	829.91	1,156.64
Buckeye P. L. (Lima, etc.)	613,417.44	978,045.64
Indiana P. L.	1,055,479.88	972,144.64
Cumberland P. L.	142,529.09	113,425.98
Southern P. L.	.....	.....
Crescent P. L.	74,316.59	78,215.84
N. Y. Transit	459,280.57	507,367.42
Northern P. L.	21,003.34	71,185.07
Tidewater P. L.	192,814.03	144,200.91
Pure Oil P. L.	142,535.76	130,009.86
Emery P. L.	33,433.42	32,135.00
Paragon Ref.	132,066.32	118,952.70
Indian Ref.	482,066.55	391,492.52
Paragon Dev.	48,614.54	35,274.72
Pittsburgh P. L.	8,267.22	8,956.90
Swiss P. L.	.....	.....
Riggs Ref.	.....	.....
Union P. L.	28,217.95	32,833.37
Fords Br'k P. L.	393.85	991.38
Allegany P. L.	1,862.82	2,148.47
Total	4,337,166.26	4,511,060.92
Daily average	139,908.59	145,518.09

Note—Indian Refining Co. also reported other deliveries of 44,801.57 bbls.

Gross Stocks

The gross stocks held by various pipe lines in the oil producing section of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky at the close of December and January were as follows:

	Dec., '23	Jan., '24
Nat. Transit	1,225,751.26	1,250,338.74
S. W. Pa. P. L.	710,075.60	759,960.40
Eureka P. L.	1,957,941.85	1,836,499.03
Buckeye P. L. (Macksburg)	560,577.30	632,211.69
Buckeye P. L. (Cleveland)	28,123.34	26,241.18
Buckeye P. L. (Lima, etc.)	3,384,990.13	3,397,306.24
Indiana P. L.	694,294.80	633,442.92
Cumberland P. L.	664,444.95	624,657.62
Southern P. L.	898,843.26	931,853.00
Crescent P. L.	99,435.12	68,010.82
N. Y. Transit	1,083,763.72	1,269,952.57
Northern P. L.	719,299.51	631,804.84
Tidewater P. L.	.....	.....
Pure Oil P. L.	369,820.56	404,795.46
Emery P. L.	4,700.93	4,299.94
Paragon Ref.	170,286.32	169,490.48
Indian Ref.	331,508.45	233,320.15
Paragon Dev.	9,451.90	13,103.77
Pittsburgh P. L.	8,331.70	7,758.40
Swiss P. L.	.....	.....
Riggs Ref.	970.27	633.40
Union P. L.	19,916.80	10,777.00
Fords Br'k P. L.	512.67	146.32
Allegany P. L.	819.88	597.85
Total	13,444,361.06	12,907,201.94
Decrease	713,365.01	537,159.12

Grades of Oil

The following table shows the amount of the different grades of oil held by the eastern pipe lines at the close of December and January, showing the gross stocks of the above fields:

	Nov., '23	Dec., '23
Pennsylvania	3,936,846.09	4,109,737.40
Lima	977,079.18	961,116.62
Kentucky	1,814,965.15	1,735,967.07
Mid-Continent	6,391,317.89	5,880,754.57
Illinois	324,152.76	229,626.28
Total	13,444,361.06	12,907,201.94

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1921	1922	1923	1924
Jan.	64,460	67,703	75,790	62,638
Feb.	70,054	75,996	71,093	.....
Mar.	68,555	78,521	76,592	.....
April	65,036	76,462	75,614	.....
May	65,466	77,592	77,365	.....
June	62,438	76,193	77,592	.....
July	59,486	76,435	71,879	.....
Aug.	64,888	79,387	76,910	.....
Sept.	60,110	78,512	72,358	.....
Oct.	57,688	77,209	76,256	.....
Nov.	58,470	75,313	70,762	.....
Dec.	61,000	74,351	69,271	.....

Daily Average Shipments

The following table gives the daily average shipments from the Pennsylvania, Lima and other fields for past four years:

	1921	1922	1933	1924
Jan.	115,550	119,792	171,067	145,518
Feb.	96,736	111,362	164,219	.....
Mar.	84,168	127,763	185,487	.....
Apr.	101,015	127,968	179,751	.....
May	100,252	127,840	177,102	.....
June	105,037	137,638	173,598	.....
July	97,096	137,872	168,330	.....
Aug.	101,652	153,275	142,766	.....
Sept.	117,440	158,761	137,266	.....
Oct.	105,728	165,345	134,597	.....
Nov.	121,803	165,677	131,426	.....
Dec.	104,023	172,861	139,909	.....

Gross Stocks

In the following table will be found gross stocks of the various lines in Pennsylvania, Lima and Kentucky oil fields including oil received from other lines, at the close of each month for the past two years:

	1922	1923
Jan.	16,297,558	14,946,567
Feb.	17,009,293	14,028,437
Mar.	16,877,927	13,872,146
Apr.	16,777,842	13,737,575
May	16,948,962	13,815,632
June	16,810,169	14,541,253
July	16,669,286	14,645,564
Aug.	16,285,229	14,779,539
Sept.	16,228,515	14,803,444
Oct.	15,757,746	14,564,111
Nov.	15,171,972	14,157,726
Dec.	14,323,765	13,444,361

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and the amounts counted in the stocks and averages reported above:

	Receipts	Shipments
1923—		
Jan.	2,798.55	2,441.36
Feb.	2,692.93	932.33
Mar.	2,978.38	13,417.06
Apr.	3,529.13	3,054.69
May	3,538.73	4,864.43
June	2,927.71	4,743.71
July	2,996.64	1,471.67
Aug.	3,199.07	3,760.34
Sept.	2,829.79	5,522.32
Oct.	2,694.23	6,351.81
Nov.	2,980.96	4,160.90
Dec.	2,893.07	3,499.37
1924—		
Jan.	2,942.19	3,941.71

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, Feb. 1	3,331,[illegible]
Runs from wells	481,[illegible]
Other receipts	334,[illegible]
Regular deliveries	514,[illegible]
Other deliveries	540,[illegible]

The amount of Illinois oil run by Tidewater Pipe Line Co. in January was 24,874.41 bbls., and deliveries were 61,[illegible] bbls. Adding these figures to those of Illinois Pipe Line Co. makes the runs and deliveries from the Illinois field as follows:

1923—	Runs	Deliveries
January	599,239.16	475,[illegible]
February	496,421.79	393,[illegible]
March	626,006.81	473,[illegible]
April	521,910.87	423,[illegible]
May	624,107.96	533,[illegible]
June	582,511.82	500,[illegible]
July	594,653.43	500,[illegible]
August	564,747.94	507,[illegible]
September	542,561.60	505,[illegible]
October	576,367.09	547,[illegible]
November	546,559.43	386,[illegible]
December	524,[illegible]	383,[illegible]
1924—		
January	493,337.25	338,[illegible]

The Tidewater Pipe Co., Ltd., also delivered in January 266,584.73 bbls. of Oklahoma oil. The total deliveries of all grades by the Tidewater were 476,953.33 bbls.

AVERAGE WEEKLY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF PORTS

Av. bbls. per wk.—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans Baton Rouge	Pt. Arthur Sabine Pass	Tampa	Total	Total All Ports
September	205,600	47,400	516,200	124,200	136,600	1,000,000	.....	140,600	.....	.....	140,600	1,140,600
October	195,000	56,000	626,000	220,000	107,000	1,178,000	.....	208,000	.....	.....	208,000	1,386,000
November	136,731	36,281	659,169	156,800	86,169	1,074,021	.....	219,331	.....	.....	219,331	1,293,352
December	122,803	48,546	609,903	163,485	154,224	1,098,960	.....	164,885	.....	.....	164,885	1,263,845

AVERAGE WEEKLY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Av. bbls. per wk.—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans Baton Rouge	Pt. Arthur Sabine Pass	Tampa	Total	Total All Ports
July	71,750	116,250	451,500	112,000	218,750	970,250	367,750	280,000	208,250	23,000	879,000	1,849,250
August	116,065	89,113	374,613	102,970	197,127	879,888	338,485	266,224	234,388	45,638	1,286,720	2,166,608
September	53,600	113,000	353,200	132,000	149,600	801,400	355,200	279,400	176,000	44,800	714,400	1,515,800
October	91,250	48,000	198,500	134,000	204,000	800,750	347,000	352,500	95,000	12,500	707,000	1,507,750
November	67,200	108,869	270,669	122,500	195,060	764,200	345,490	359,331	147,469	33,367	885,731	1,649,931
December	105,000	133,679	240,254	144,739	300,545	924,217	420,224	492,709	186,949	61,268	1,161,140	2,085,357

GROSS PRODUCTION BY MONTHS AND DAILY AVERAGE IN THE U. S. FOR 12 MONTHS

		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Wyoming-Montana	Other fields	Total
1923—										
February:	Month	16,426,759	12,445,020	7,998,547	2,360,288	2,752,924	2,092,524	2,970,760	2,911,096	49,957,918
	Daily average	586,670	444,465	285,662	84,296	98,319	74,733	106,095	103,968	1,784,140
March:	Month	19,608,192	13,958,828	9,176,520	2,588,531	2,834,330	2,334,765	3,358,011	3,469,397	57,329,574
	Daily average	632,522	450,188	296,017	83,501	91,430	75,315	108,323	111,935	1,849,341
April:	Month	20,695,959	14,399,610	8,548,651	2,624,430	2,893,290	2,224,800	3,670,934	3,286,090	58,043,764
	Daily average	689,965	479,987	284,955	87,481	96,443	74,160	122,366	109,536	1,934,793
May:	Month	21,535,365	15,658,782	8,836,829	2,852,217	3,250,846	2,298,804	3,650,903	3,550,367	61,634,113
	Daily average	694,689	505,122	284,736	92,007	104,866	74,155	117,771	114,527	1,987,913
June:	Month	22,667,106	15,572,730	9,129,282	2,797,830	3,401,172	2,086,670	3,470,176	3,413,155	62,538,121
	Daily average	755,570	519,091	304,309	93,261	113,372	69,392	115,673	113,771	2,084,603
July:	Month	25,262,082	15,260,184	11,258,042	3,448,566	3,713,738	1,882,481	4,245,547	3,334,110	68,604,750
	Daily average	814,906	492,264	382,518	78,986	119,798	60,725	136,953	107,552	2,213,057
August:	Month	26,440,005	14,049,076	12,157,439	2,316,320	3,292,580	1,952,249	4,290,406	3,479,977	67,977,052
	Daily average	852,903	453,196	392,172	74,720	106,212	62,979	138,400	115,969	2,193,453
September:	Month	25,762,487	12,812,220	12,879,682	2,234,730	3,164,900	1,787,430	4,861,650	3,269,551	66,772,650
	Daily average	858,750	427,074	429,323	74,491	105,497	59,581	162,052	108,968	2,225,755
October:	Month	24,576,400	12,961,782	15,933,383	2,336,346	3,120,274	1,837,990	3,540,880	3,475,913	67,783,368
	Daily average	792,787	418,122	513,980	75,366	100,654	59,290	114,222	112,126	2,186,560
November:	Month	22,397,848	13,334,620	15,566,507	2,268,940	2,973,000	1,816,860	4,792,466	3,128,464	66,278,705
	Daily average	746,595	411,154	518,550	75,628	99,100	60,562	159,782	104,615	2,208,623
December:	Month	21,899,247	12,232,259	10,065,856	2,345,150	4,017,850	1,919,574	3,304,326	3,147,812	60,932,074
	Daily average	706,427	394,589	324,705	75,650	129,608	61,922	106,591	101,542	1,965,034
1924—										
January:	Month	20,913,500	12,116,353	10,089,391	2,354,878	3,686,680	1,827,053	4,831,395	2,955,590	60,774,840
	Daily average	674,597	397,263	325,461	72,738	118,925	58,937	149,400	95,339	1,960,479
	Twelve months	268,183,950	163,800,464	132,220,019	29,428,126	39,101,584	24,061,300	46,437,404	29,430,516	762,663,363
	Daily average	734,751	448,768	362,247	80,625	107,128	65,927	127,363	108,029	2,089,763

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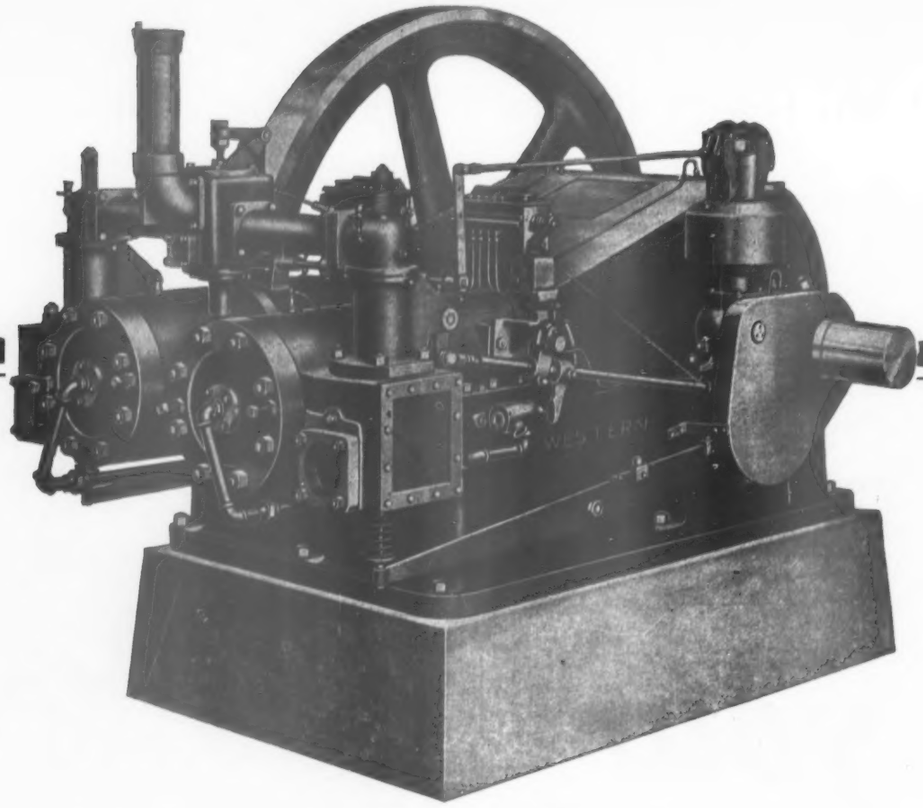

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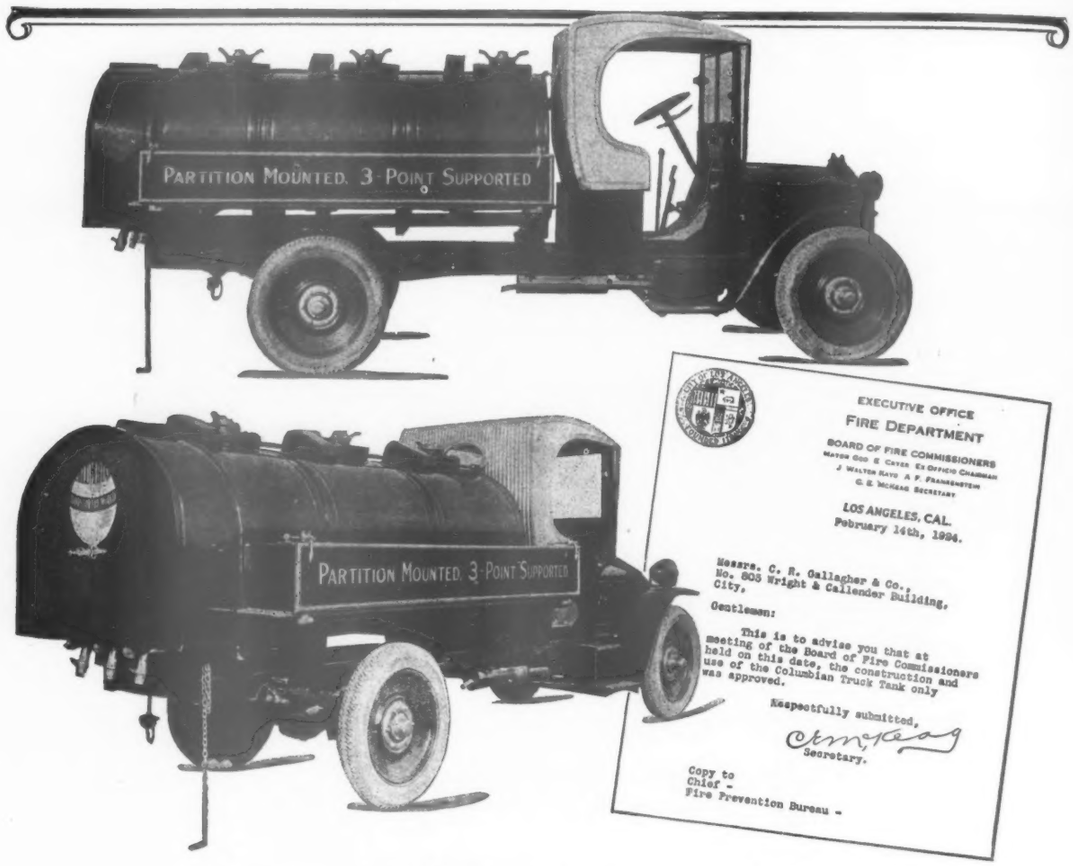
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FIRE DEPARTMENT
BOARD OF FIRE COMMISSIONERS
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February 14th, 1924.
Messrs. C. R. Gallagher & Co.,
No. 803 Wright & Callender Building,
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Respectfully submitted,
Secretary.
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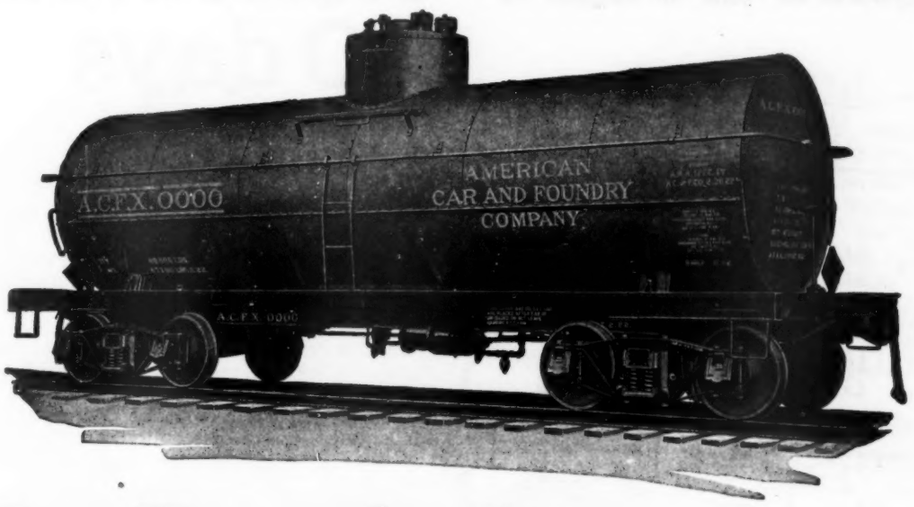
DALLAS, TEXAS
210 Southwestern Life Bldg.
LOS ANGELES, CALIF.
806 Wright & Callender Bldg.

COLUMBIAN
Partition Mounted-3 Point Supported
TRUCK TANKS

The Car of Predominant and Distinctive Merit



"Car Foundry"

Tank Cars

The substantial orders received in response to our February advertisement calling attention to the tank car situation have been very gratifying indeed. In consequence we have already resumed full production and are rushing the completion of increased facilities, in order that we may do our utmost to meet to the fullest possible extent the "pinch" demand for new tank cars that we believe will maintain for the next several months.

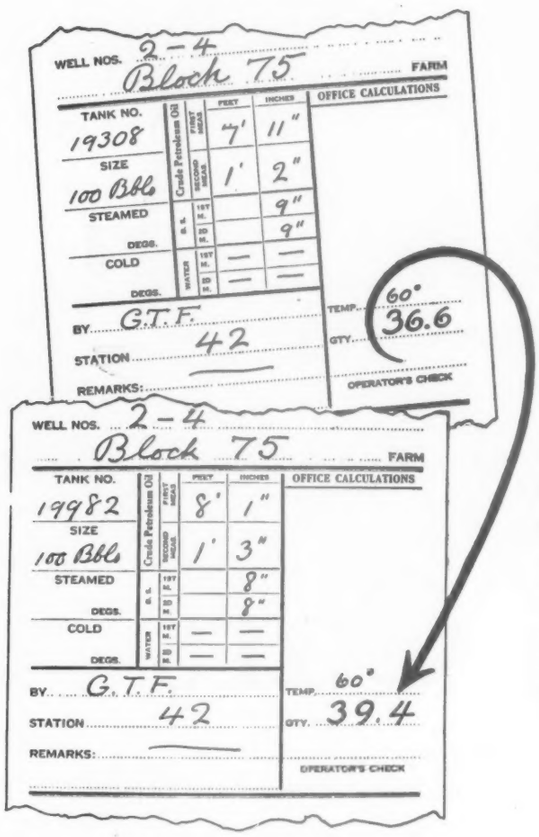
The supply of used cars and cars for rent is rapidly disappearing. Orders for new cars should be placed promptly to cover for your future requirements.

Always get a "Car Foundry" quotation.

American Car and Foundry Company

New York	Chicago	St. Louis
165 Broadway	Railway Exchange Building	915 Olive Street

Same Lease-Same Wells 30 days Later



First Ticket:

A Burkburnett Gauge Ticket in April 1923

Second Ticket:

30 Days later — with a Parkersburg Vapor Tight Tank

40 cents more per barrel—these gauge tickets tell the story!

And all the production sold AT A BETTER PRICE than before evaporation was stopped! The name of the nationally known corporation who reported this saving will be given upon request.

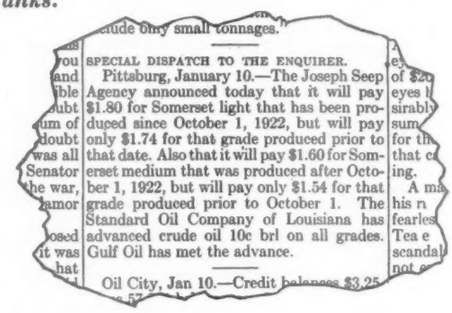
Think of the profits that corporation lost BEFORE evaporation was stopped! 40 cents per barrel—and about 4% of their production!

Read the clipping reproduced below! Whenever this happens—and it only indicates the tendency to buy crude on a gravity basis—your profits depend upon gravity.

Parkersburg Vapor Tight Tanks not only hold crude to its original gravity—they hold every barrel against losses through evaporation.

Parkersburg Service includes complete installations of Tanks and Equipment for retaining gas with crude at pressures consistent with customers' requirements, or for separation of gas for manufacture of gasoline or use as fuel.

Parkersburg Vapor Tight Equipment can be applied to any steel tank of any capacity, although the best results are obtained when this equipment is used with Parkersburg Bolted Steel Tanks.



...crude only small tonnages.

SPECIAL DISPATCH TO THE ENQUIRER.

Pittsburg, January 10.—The Joseph Seep Agency announced today that it will pay $1.80 for Somerset light that has been produced since October 1, 1922, but will pay only $1.74 for that grade produced prior to that date. Also that it will pay $1.60 for Somerset medium that was produced after October 1, 1922, but will pay only $1.54 for that grade produced prior to October 1. The Standard Oil Company of Louisiana has advanced crude oil 10c brl on all grades. Gulf Oil has met the advance.

Oil City, Jan 10.—Credit balances $3.25

Start Saving That Profit Today
Ask Our Nearest Representative for Full Particulars on Parkersburg Tanks and Equipment

The PARKERSBURG RIG & REEL COMPANY

Main Office and Works, Parkersburg, W. Va. ***New York Office,*** 30 Church St.

California Representatives, BUCK & STODDARD
485 California St., San Francisco, Calif.; Box 720, Arcade Station, Los Angeles, Calif.

District Offices and Distributing Warehouses from which Parkersburg Service is available

TEXAS
*Houston
Breckenridge
Corsicana
Iowa Park
Mexia
Orange
Ranger
Westbrook

WYOMING
*Casper
‡Rawlins

LOUISIANA
*Shreveport
Haynesville

KANSAS
Eldorado
Madison

WEST VIRGINIA
Parkersburg
Clarksburg

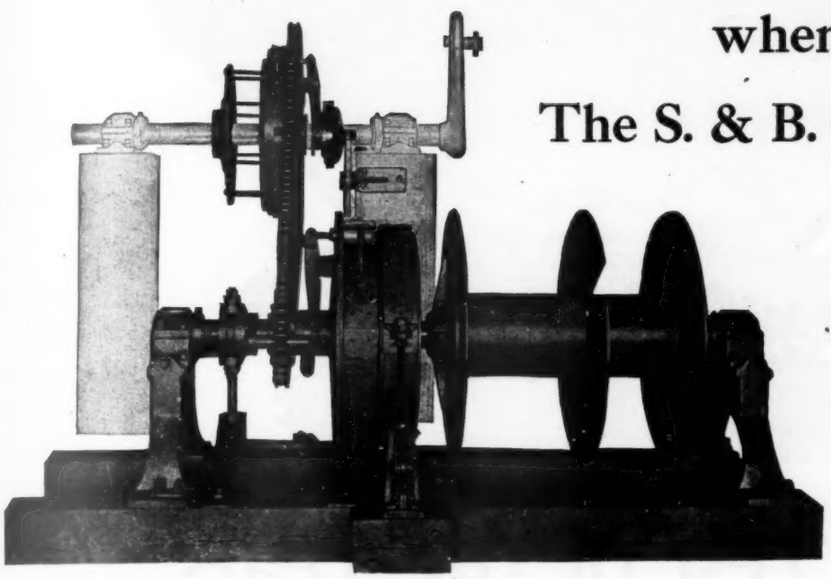
OKLAHOMA
*Tulsa
Bristow
Drumright
Hominy
Okmulgee
Wetumka
Tonkawa
Wilson
Shidler
Stroud
Wewoka

ARKANSAS
*El Dorado
Smackover
McNeil

MONTANA
Sunburst
†Winnett

*District Offices ‡Frick-Reid Supply Co. †Continental Supply Co.

Fast Bailing is *Safe*



when using The S. & B. Chain Driven Sand Reel and is *Economical* Bailing

Patented December 4, 1923

Two Slip Clutches make it Safe

The Chain Drive itself is positive. However, the application of this highly efficient power transmission on the S. & B. Chain Driven Sand Reel, by means of its combination with *two* very *flexible and simple* Friction *Slip Band* Clutches, neither of which is positive, provides adequate insurance against the possibility of breakage or damage.

The pressure of *two fingers* on the Control Lever is sufficient to engage the Operating *Slip* Clutch on the Sand Reel Driver, which will start spooling the Line, lifting the Bailer. Should the Bailer "hang up" in the hole, at any speed, either of the two Friction Clutches will *slip* momentarily, giving the Driller sufficient warning to enable him to stop spooling *instantly* by simply lifting his hand from its pressure on the Control Lever, allowing it to come to neutral position. Reversing the Lever is not necessary in this emergency.

There is no other mechanism made, that will consistently handle any size Bailer, in any depth hole, as easily, as fast, as economically, or with as little wear and tear, and little Fuel and Power consumption. as the S. & B. Chain Driven Sand Reel.

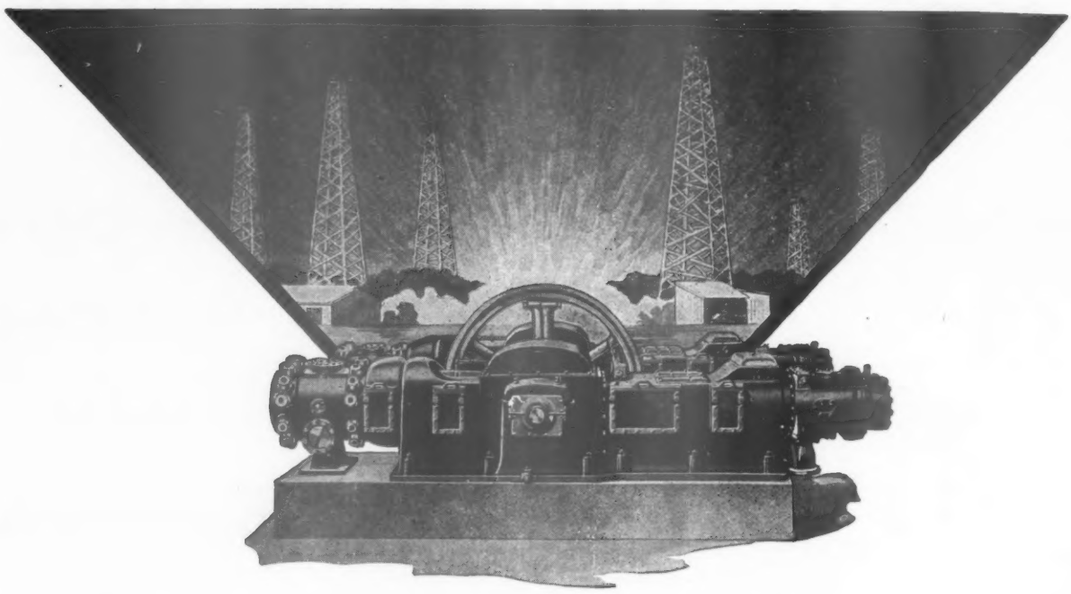
For Sale Through All Supply Stores

Manufactured by

THE OIL CITY SUPPLY MFG. CO.

Coffeyville, Kansas

Ask for Our New Booklet, "Economical Bailing"



The Test of the Years

Thousands of installations, operating under every conceivable condition, are visible proofs of the practicality of Bessemer Oil Field Equipment.

Out in the oil fields, where the knocks of service are hardest, batteries of Bessemers are pounding out 99% operating records—month after month, year after year. This limitless dependability has enabled Bessemer to maintain an undisputed leadership for over a quarter century.

What can be more convincing testimony of their correctness in engineering principles, quality of materials and skill in manufacture?

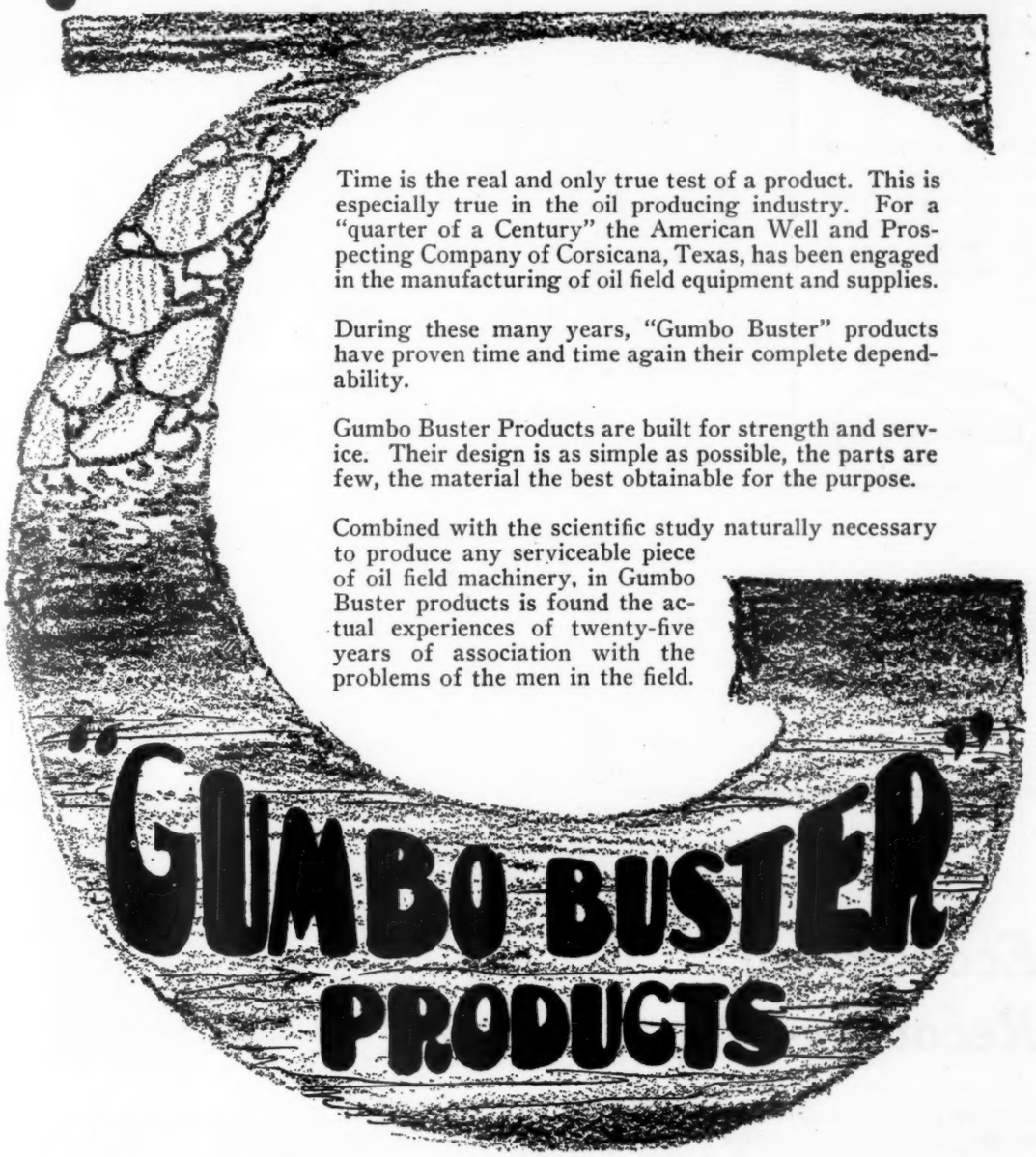
Time proves that "You Buy the Best When You Buy the Bessemer."

THE BESSEMER GAS ENGINE COMPANY
52 York Street Grove City, Pa.

BESSEMER

BESSEMER OIL FIELD ENGINES – COMPRESSORS VACUUM PUMPS – ROLLER PUMPING POWERS

FOR A QUARTER OF A CENTURY



Time is the real and only true test of a product. This is especially true in the oil producing industry. For a "quarter of a Century" the American Well and Prospecting Company of Corsicana, Texas, has been engaged in the manufacturing of oil field equipment and supplies.

During these many years, "Gumbo Buster" products have proven time and time again their complete dependability.

Gumbo Buster Products are built for strength and service. Their design is as simple as possible, the parts are few, the material the best obtainable for the purpose.

Combined with the scientific study naturally necessary to produce any serviceable piece of oil field machinery, in Gumbo Buster products is found the actual experiences of twenty-five years of association with the problems of the men in the field.

"GUMBO BUSTER" PRODUCTS

REPUBLIC SUPPLY CO.

Distributors

TEXAS—OKLAHOMA—ARKANSAS—LOUISIANA

Manufactured by

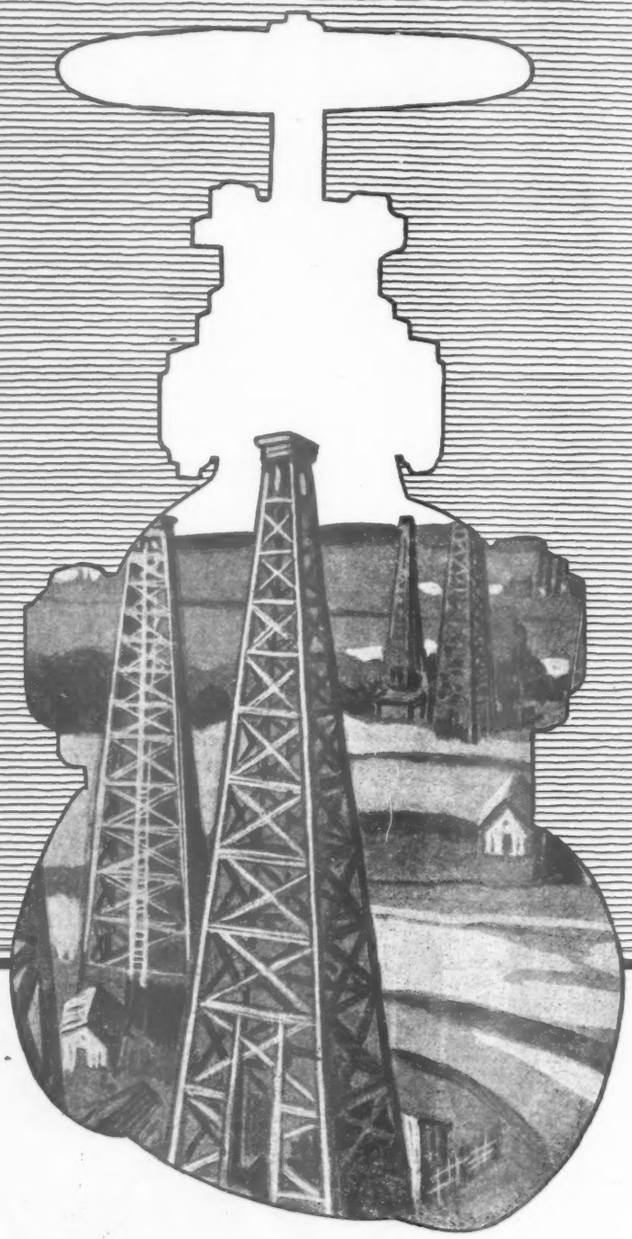
AMERICAN WELL & PROSPECTING CO.

CORSICANA, TEXAS

Branch: LOS ANGELES, California

Darling Gate Valve parts are perfectly plain and free from pockets. The rotating discs seat in a different position with every operation. They shut tightly and open easily.

TRADE DARLING MARK



Economical Recovery---

Is as big a factor as speedy drilling when you figure up your total production costs—from "rock hound" storage tanks.

Don't waste—don't lose control of what you work so hard to get. Standardize on the valve that operates perfectly for the longest time under every condition. Ask any old-timer what he thinks of Darlings.

DARLING VALVE & MANUFACTURING CO.

New York Main Office: Williamsport, Pa. Chicago

Mid-Continent District Sales Managers:

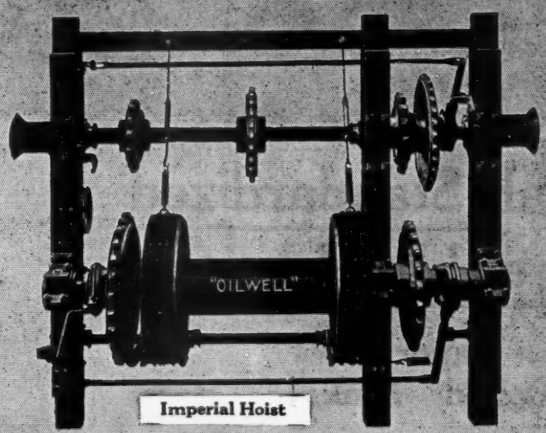
Mr. Earl J. Connelly, 413-414 First National Bank Bldg., Oklahoma City, Okla.

Mr. Frank Cavenagh, 313 West Bldg., Houston, Texas

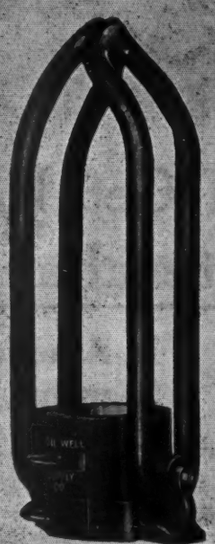
"OILWELL"

IMPERIAL ROTARY EQUIPMENT

Oil Bath Swivel

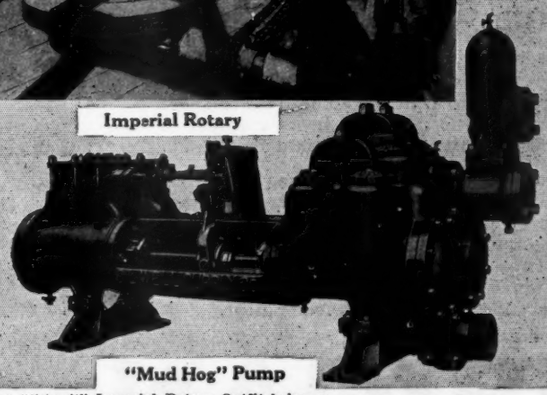


Imperial Hoist



Double Gate Elevator

Imperial Rotary



"Mud Hog" Pump

Imperial Tool Joint

Eccentric Tong

The "Oilwell" Imperial Rotary Outfit being made up of complete parts each of which is a leader in its line, is vastly superior to any other outfit.

Write for special bulletins descriptive of these articles or get copies at any of our 100 Branch Stores

OIL WELL SUPPLY COMPANY

PITTSBURGH, U. S. A.

New York San Francisco Los Angeles Tampico London

OILWELL SUPPLY CO

World's Largest Manufacturers of Oil Field Equipment

You Get Real Standardized Interchangeable Units

In American Vapor Proof Segment Bolted Tanks!

The first duty of an oil field storage tank is to HOLD THE OIL. And the American Vapor Proof Segment Bolted Tank is as close to 100% gas tight as a bolted tank can be, because of its segment principle, double channel bolted construction and its new improved anti-vacuum and pressure valve.

Second only to holding the oil, however, is economy of construction and upkeep. And these tanks give you STANDARDIZED INTERCHANGEABLE UNITS that are a big advantage. All bottom sheets are the same, as are all deck sheets and side sheets, and any segment top or bottom sheet, or any side sheet, can quickly and inexpensively be replaced. You do not have to cut down and reset the tank to effect needed repairs. You merely unscrew a few bolts, slip out the damaged sheet and replace it with a new one. You never have to wait for some off-size sheet to come from a distant factory. The standard sheets are kept in stock by our many distributors in all of the important fields.

The New Improved Regulator keeps tank from being blown up by pressure or collapsed by vacuum. Special Clean-Out Man-Hole Covers, removable from the outside, permits efficient cleaning without workmen entering the tank. A light gray metal preserving paint counteracts sun's rays and reduces evaporation. Let us quote you on these tanks now, also on your other requirements. We make a complete line of oil storage equipment.

AMERICAN TANK CO. TRADE Quality MARK WHOLESALE RETAIL

Standardized Units permit any top or bottom segment or side sheet to be easily replaced without cutting down and resetting the tank — an important feature of American Vapor Proof Segment Bolted Tanks.

AMERICAN TANK COMPANY

Oklahoma City, Okla.

Sales Offices: Tulsa, Tonkawa. Shidler, Okla.
El Dorado, Louann, Smackover, Ark.

DISTRIBUTORS:

ROGER L. COLE
Wewoka, Okla.

LEUGEMORS TANK CO.
Barnsdall, Pershing, Wynona, Okla.

M-K TANK CO.
Duncan, Ardmore, New Wilson, Healdton, Okla.

MAHLANDT TANK CO.
Cleveland, Teriton, Hominy, Mannford, Okla.

OKLAHOMA TANK CO.
Cushing, Ingalls, Yale, Stroud, Drumright, Okla.

R. POGUE TANK CO.
Slick, Okla.

PRODUCERS TANK CO.
Bristow, Okla.

CARGILE TANK CO.
Eastland, Breckenridge, Texas.

U. S. TANK CO.
Mexia, Texas.

American Quality Products:

—Oil Refining Equipment
—Bolted Steel Tanks
—Welded Steel Tanks
—Truck Tanks
—Dump Bodies
—Wood Hydraulic Hoists
—Condenser Boxes
—Absorbers
—Agitators
—Pressure Tanks
—Redwood Tanks
—Filling Station Tanks
—Fuel Oil Storage Tanks

(Check your requirements on this list — tear out and mail it to us now.)

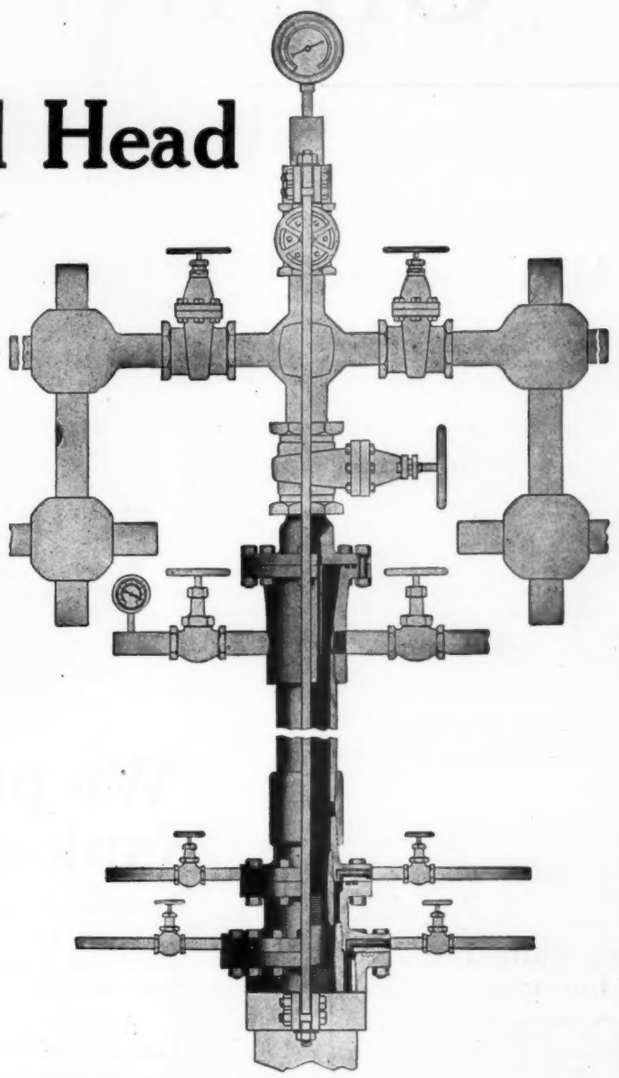
Regan

Prevent wild blowouts

with the

Regan Control Head

You can prevent a blowout such as this with the Regan and place the most powerful gusher under the cap in shortest time.



An ounce of prevention is worth a pound of cure. If you are drilling in a high pressure field, safeguard your wells with the Regan. It permits quick and safe capping and removes the hazard of costly blowouts. About 50% of the Santa Fe Springs and Signal Hill wells have 'em. Send for catalog.

Other Regan Products:

Tool Joints	*Traveling Blocks*
Fish Tail Bits	*Spring Casing Hooks*
Overshots	*Fishing Tools*

Factory Representatives:

HILLMAN-COONEY, (Inc.)

506 Higgins Bldg., Los Angeles, Calif.

Regan

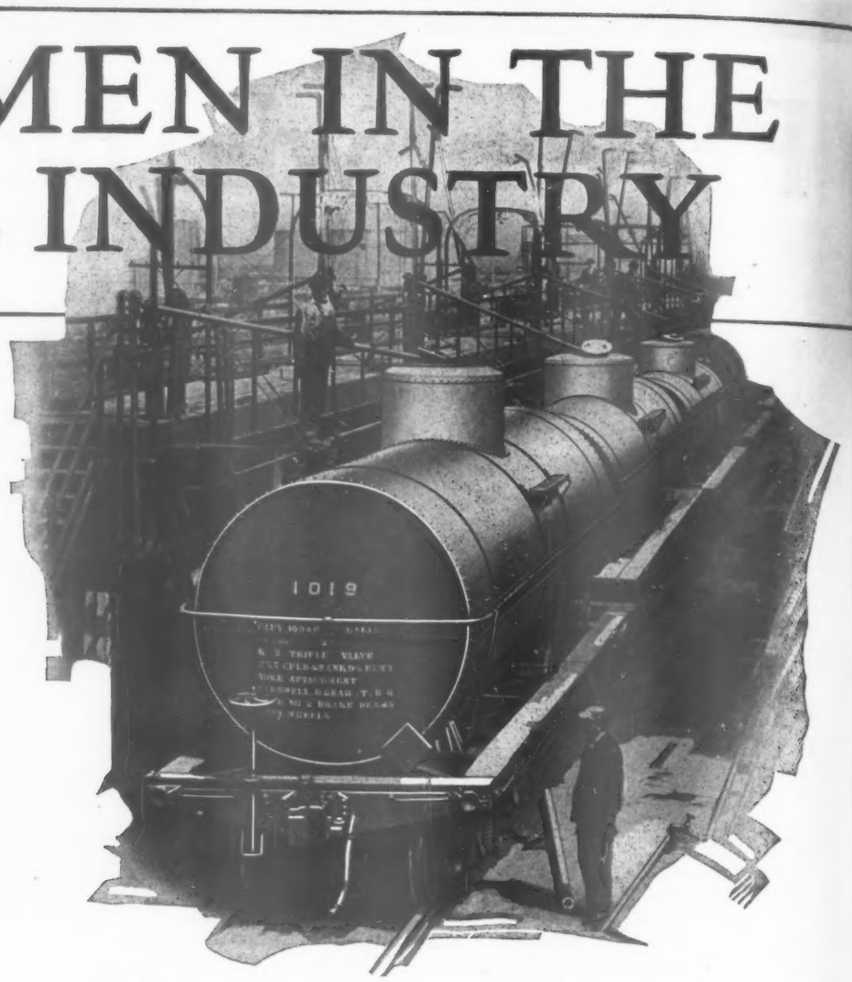
Forge & Engineering Co.

Manufacturers of **Oil Well Equipment**

Quality – Wrought on the Forge of Experience

San Pedro, California U·S·A.

TO MEN IN THE OIL INDUSTRY



We prevent 3 kinds of tank car leaks

THERE is ordinarily a big evaporation loss from uninsulated tank cars loaded with high test gasoline. We have developed a tank car insulation that prevents most of this loss—yielding a high return on the investment.

Another preventable tank car waste is the heat loss from cars loaded with hot oils, tar and asphalt. Here, again, we have a highly efficient insulation specification that will save you money.

Lead dome cover gaskets easily become scored and leak. To prevent this we make a Special Moulded Asbestos Gasket which is resilient and always forms a tight joint on either bolted or screw type covers. We also make special moulded asbestos gaskets that give better service on outlet caps than many makeshift varieties.

Let us give you complete information about these products.

JOHNS-MANVILLE, Inc., 294 Madison Ave. at 41st St., New York City
Branches in 61 Large Cities
For Canada: CANADIAN JOHNS-MANVILLE CO., Ltd., Toronto

Fighting waste is our business

Many ways of reducing oil industry costs have been worked out by Johns-Manville. Our business is primarily based on our ability to cut production and maintenance losses—we have been doing it successfully for over fifty years.

Asbestos

JOHNS-MANVILLE

Cross-section of the tough, durable blanket of Firefoam that can be thrown over any burning surface from Foamite *equipment. Time has proven Firefoam Liquid the one dependable foaming agent.*

Always the same tough, fire-killing Firefoam

Time does not weaken the power of Firefoam Liquid

When designed, installed and maintained by Foamite-Childs engineers the Foamite *System has never failed on such fires as shown above.*

The real test of fire extinguishing ability comes when an actual fire breaks out unexpectedly, and threatens destruction.

That is when *Foamite* Equipment can be depended upon to produce and deliver the maximum quantity of durable, fire-smothering foam.

That is the crucial test, and for many years, in many lands, under practical field conditions, *Foamite* Protection has been *demonstrating* its right to your confidence.

Whether applied from *Foamite* hand extinguishers, or portable engines, or motorized units, or system installations, genuine Firefoam always smothers fire. Beneath its air-tight blanket, fire is impossible. It gives the oil industry positive assurance of dependable protection over a period of years, and under varying climatic conditions.

The *Foamite* 40-gallon portable engine, which generates nearly 300 gallons of Firefoam and throws it a distance of 75 feet. For reinforcing hand extinguisher protection —unequalled for fires that have gained some headway

Foamite-Childs engineers have designed, installed and maintained *Foamite* Protection for hundreds of refineries and thousands of storage tanks. Their service safeguards the many other places where petroleum and its products are handled. As specialized engineering experts, they recommend exactly the type of equipment that will *protect* your particular risks.

Representatives located at 290 convenient centers enable you to consult with this organization promptly, and without obligation. Write today for information on how *Foamite* Protection can be adapted to your property—large or small—to make it safe from fire loss

Brown Bros.

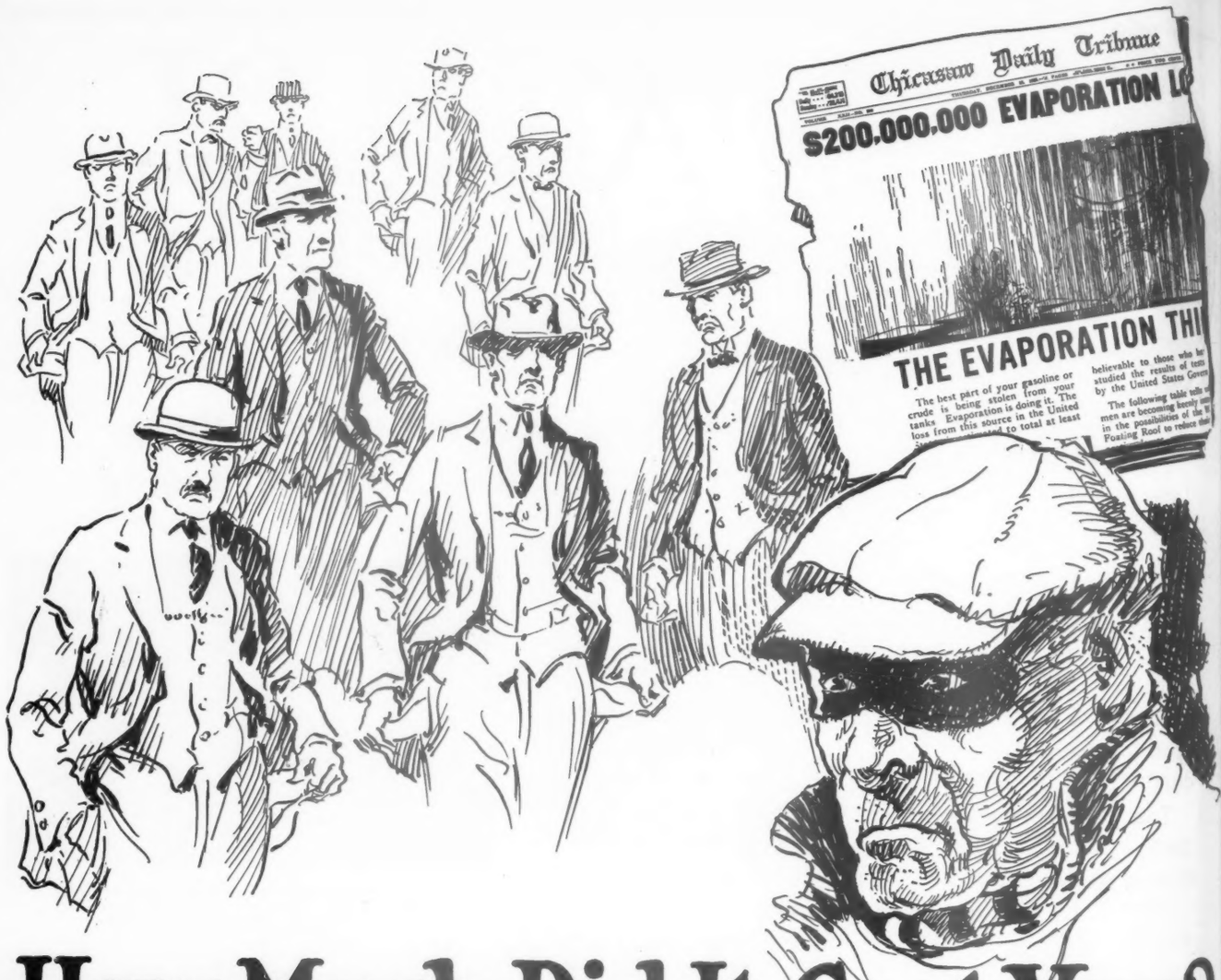
One of a dozen places in a refinery where Foamite *portable extinguishers and engines will quickly and surely smother a fire at the start.*

Foamite-Childs Corporation

Fire Protection Engineers and Manufacturers

728 Turner Street, Utica, N. Y.

Sales and Engineering Representatives in the leading cities of all countries


Chicagoan Daily Tribune
$200,000,000 EVAPORATION L
THE EVAPORATION THI
The best part of your gasoline or crude is being stolen from your tanks Evaporation is doing it. The loss from this source in the United
believable to those who ha studied the results of tests by the United States Gover
The following table tells men are becoming keenly in the possibilities of the W Floating Roof to reduce their

How Much Did It Cost You?

What was your loss in the $200,000,000 evaporation robbery in 1923?

You paid part of it; that's sure. No one in the oil industry can escape paying a part of this loss; for losses reduce income and affect wages and salaries as well as dividends.

More than half a million dollars every day is lost through evaporation. The industry, heretofore, has been powerless to effectively reduce this waste—but now it is possible, for the Wiggins Floating Roof cuts down the evaporation loss to a practicable minimum, as proved by actual tests.

What could show more plainly the value of the Wiggins Floating Roof than the accompanying figures derived from actual tests carried on by Mr. Wiggins when he was with the U. S. Bureau of Mines. This tabulation definitely indicates one positive thing—that evaporation is the most serious problem in the oil industry today.

These figures are the index numbers from which you can determine your share of the 1923 $200,000,000 evaporation loss. Just take the figures for the class of roofs you use and multiply it by the number of tanks you have. That will roughly tell you your loss last year.

Now what can you do about it? First, get our bulletin on the Wiggins Floating Roof, and prices on roofs for your tanks. Then determine the savings you can make with this roof. You will then know what to do to stop your evaporation losses.

But first write for the bulletin.

Annual Evaporation Losses from a 55,000-Barrel Tank Handling 10,000 Barrels a Day—In Dollars

Kind of Oil Pumped	Evaporation Losses in Dollars Based on 42 Gallons of Gasoline to the Barrel and a price of Ten Cents a Gallon	
	Sheathing roof covered with gas tight galvanized iron	Wiggins Floating Roof
Motor Fuel (58° Be. Gas.)	$27,300	$1,260
Light Crude (37-40° Be.)	16,380	830
Average Mid-Continent Crude (33°-36° Be.)	12,600	630

Why the U. S. Navy Uses the Wiggins Floating Roof

Because no other type of device keeps fire out of the tank.

Because no other type of device keeps oil in the tank.

Because it is the most PRACTICAL means of solving the fire and evaporation problems.

CHICAGO BRIDGE & IRON WORKS

CHICAGO	NEW YORK	DALLAS	SAN FRANCISCO
2128 Old Colony Building	3147 Hudson Termin	1641 Praetorian Building	1054 Rialto Building

HORTON Products include the 5 RING 55, 7 RING 80 and other tanks, **THE HORTONSPHERE** and Refinery Equipment

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